CHAPTER 33

LIGHTS

LIST OF EFFECTIVE PAGES

N, R or D indicates pages which are New, Revised or Deleted respectively.

Remove and insert the affected pages and complete the Record of Revisions and the Record of Temporary Revisions as necessary.

CHAPTER 33

LIGHTS

LIST OF EFFECTIVE PAGES

N, R or D indicates pages which are New, Revised or Deleted respectively.

Remove and insert the affected pages and complete the Record of Revisions and the Record of Temporary Revisions as necessary.

CH/SE/SU	C	PAGE	DATE
33-10-00		407	Feb 28/77
33-10-00		408	Feb 28/77
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33-12-00		8	Nov 30/75
33-12-00		9	Jun 30/75
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33-12-00		405	Feb 29/76
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33-12-00		408	Jun 30/75
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33-15-00		10	May 30/76
33-15-00		11	May 30/76
33-15-00		12	May 30/79
33-15-00		13	May 30/79
33-15-00		14	May 30/79
33-15-00		15	May 30/79
33-15-00		16	May 30/79
33-15-00		17	Nov 30/77
33-15-00		18	Nov 30/77

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
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33-15-00		27	Sep 30/91	33-16-00		4	Nov 30/76
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33-15-00		103	Aug 30/78	33-16-00		102	Aug 30/75
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33-15-00		523	Sep 30/87	33-17-00		110	Nov 30/79
33-15-11		401	Jun 30/75	33-17-00		111	Nov 30/79
33-15-11		402	Jun 30/75	33-17-00		112	Nov 30/79

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
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33-17-00		503	Jun 30/75	33-21-00		402	Mar 31/95
33-17-01		401	Feb 29/76	33-21-00		403	Mar 31/95
33-17-01		402	Jun 30/75	33-21-00		404	Mar 31/95
33-17-01		403	Aug 30/75	33-21-00		405	Mar 31/95
33-17-01		404	Feb 29/76	33-21-00		406	Mar 31/95
33-17-01		405	Aug 30/75	33-21-00		407	Mar 31/95
33-17-01		406	Aug 30/77	33-21-00		501	Feb 29/76
33-17-01		407	Aug 30/77	33-21-00		502	Mar 31/95
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33-17-12		402	Aug 30/75	33-22-00		3	Aug 30/75
33-17-12		403	Aug 30/75	33-22-00		4	Aug 30/75
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33-17-12		406	Aug 30/75	33-22-00		103	Mar 29/96
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33-20-00		402	Jun 30/75	33-22-00		107	Mar 29/96
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33-21-00		106	Mar 31/95	33-23-00		106	Nov 30/75
33-21-00		107	Mar 31/95	33-23-00		107	Nov 30/79
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33-21-00		109	Mar 31/95	33-23-00		402	Mar 31/95
33-21-00		110	Mar 31/95	33-23-00		403	Mar 31/95

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
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33-31-00		504	Aug 30/75	33-42-00		103	Aug 30/78
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33-41-21		402	Mar 29/96	33-43-00		502	Jun 30/75
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33-41-21		408	Mar 29/96	33-43-11		406	Feb 28/77
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33-41-41		402	Nov 30/80	33-43-11		501	Feb 28/77
33-41-41		403	Aug 30/80	33-43-11		502	Feb 28/77

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33-43-11		505	Feb 28/77	33-44-11		506	Feb 28/77
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33-44-00		1	Aug 30/77	33-44-12		401	Mar 29/96
33-44-00		2	Nov 30/75	33-44-12		402	Mar 29/96
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33-44-11		405	Feb 28/77	33-51-00		405	Sep 29/89
33-44-11		406	Feb 28/77	33-51-00		406	Sep 29/89
33-44-11		501	Feb 28/77	33-51-00		407	Nov 30/78
33-44-11		502	Feb 28/77	33-51-00		408	Nov 30/78
33-44-11		503	Feb 28/77	33-51-00		409	Sep 29/89

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
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33-51-00		415	Sep 29/89	33-52-00		205	Mar 31/95
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33-51-00		511	Sep 30/90	33-52-20		403	Sep 29/89
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33-52-00		108	Mar 31/95				
33-52-00		109	Mar 31/95				
33-52-00		110	Mar 31/95				
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SERVICE BULLETIN LIST

In the following service bulletin list, SB indicates an aircraft manufacturers bulletin, AEB indicates an airline engineering bulletin and OL indicates an engine manufacturers bulletin (complete identification OL.593-XX-XXX).

	SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
	SB 33-001			Not applicable
	SB 33-002		Feb 28/77	Embodied Lights. Floodlamp -To change the existing floodlamp at the forward baggage compartment door to one with a lens over the filament
	SB 33-003			Embodied Lighting. Tail anti-collision and navigation lights -Deletion of inhibition during fuel jettison
	SB 33-003	01		Embodied Lighting. Tail anti-collision and navigation lights -Deletion of inhibition during fuel jettison
R	SB 33-003	02		Embodied Lighting. Tail Anti-Collision and Navigation Lights - Deletion of inhibition during fuel jettison
	SB 33-004			Not applicable
	SB 33-004	01		Not applicable
	SB 33-005		Feb 28/77	Embodied Lights -Flight compartment -To introduce bonding for panels 12-211 and 5-212.
	SB 33-005	01		Embodied Lights -Flight compartment -To introduce bonding for panels 12-211 and 5-212.
	SB 33-005	02		Embodied Lights -Flight compartment -To introduce bonding for panels 12-211 and 5-212.
	SB 33-007		Nov 30/77	Embodied Lights -Anti collision/Navigation -to introduce an improved light assembly at the tail cone position
	SB 33-007	01		Embodied Lights -Anti collision/Navigation -to introduce an improved light assembly at the tail cone position
	SB 33-008			No effect Lights -Change of a wing navigation lamp

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			mirror assemblies
SB 33-008	01		No effect Lights - Change of a wing navigation lamp mirror assemblies
R SB 33-008	02		No effect Lights - Change of a wing navigation lamp mirror assemblies
SB 33-009			Applicable Lights -To change the colour filters of the wing navigation lights
SB 33-010			Applicable Lights -Passenger call system -Modified wiring to cater for the appropriate steward "call" when the forward passenger compartment divider bulkhead is used
SB 33-010	01		Applicable Lights -Passenger call system -Modified wiring to cater for the appropriate steward "call" when the forward passenger compartment divider bulkhead is used
SB 33-010	02		Applicable Lights -Passenger call system -Modified wiring to cater for the appropriate steward "call" when the forward passenger compartment divider bulkhead is used
SB 33-011			Not applicable
SB 33-012			Applicable Lights. Exterior -To install a revised standard of landing and landing/taxi lamps
SB 33-012	01		Applicable Lights. Exterior - To install a revised standard of Landing and Landing/Taxi Lamps
SB 33-013			No effect Lights -Fuel quantity indication (FQI) to change type of resistor for FQI integral lighting
SB 33-013	01		No effect Lights. Fuel quantity indication (FQI) - To change type of resistor for fuel quantity indication (FQI) control panel integral lighting
SB 33-013	02		No effect Lights. Fuel quantity indication -To change type of resistor for fuel quantity indica-

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	SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
				tion (FQI) integral lighting
	SB 33-013	03		Applicable Lights. Fuel quantity indication -To change type of resistor for fuel quantity indication (FQI) control panel integral lighting
	SB 33-014		Nov 30/77	Embodied Lights -Boarding vestibule =to introduce a ventilated lightshade and a revised method of locating the ceiling panel to the lantern reflector in the vestibule areas
	SB 33-014	01		Applicable Lights -Boarding vestibule -to introduce a ventilated lightshade and a revised method of locating the ceiling panel to the lantern reflector in the vestibule areas
R	SB 33-014	02		No effect Lights -Boarding vestibule -to introduce a ventilated lightshade and a revised method of locating the ceiling panel to the lantern reflector in the vestibule areas
	SB 33-015		Aug 30/77	Embodied Lights, call systems -To improve attachment and visibility of cabin ceiling Steward's call lights
	SB 33-015	01		Embodied Lights, call systems -To improve attachment and visibility of cabin ceiling Steward's call lights
	SB 33-016			Not applicable
	SB 33-017			Applicable Lights: Exterior -To introduce an isolating transformer into the anti collision light flasher unit supply
	SB 33-017	01		Applicable Lights: Exterior -To introduce an isolating transformer into the anti collision light flasher unit supply
	SB 33-018		Nov 30/78	Embodied Lighting-Distance Measuring Equipment (DME) digital indication -To change supply of dimming circuit from 28VDC normal bus-bar to 28VDC emergency bus-bar, left hand side (LHS) only
	SB 33-018	01		No effect

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SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			Lighting. Distance Measuring Equipment (DME)
			Digital Indication
			- To change supply of dimming circuit from
			28VDC normal busbar to 28VDC emergency bus-
			bar (L.H. side only)
SB 33-018	02		No effect
			Lighting. Distance Measuring Equipment (DME)
			Digital Indication
			- To change supply of dimming circuit from
			28VDC normal busbar to 28VDC emergency bus-
			bar (L.H. side only)
SB 33-018	03		Embodied
			Lighting. Distance Measuring Equipment (DME)
			Digital Indication
			- To change supply of dimming circuit from
			28VDC normal busbar to 28VDC emergency bus-
			bar (L.H. side only)
SB 33-019		Nov 30/78	Embodied
			Lights.To improve accessibility to emergen-
			cy battery pack located in rear vestibule
SB 33-020			Embodied
			Lights -Master Warning System (MWS) -To
			inhibit green hydraulic low pressure (LP)
			warning input to power flying control (PFC)
			MWS caption during take-off (102 A/C)
SB 33-020	01		Embodied
			Lights -Master Warning System (MWS) -To
			inhibit green hydraulic low pressure (LP)
			warning input to power flying control (PFC)
			MWS caption during take-off (102 A/C)
SB 33-020	02		Embodied
			Lights -Master Warning System (MWS) -To
			inhibit green hydraulic low pressure (LP)
			warning input to power flying control (PFC)
			MWS caption during take-off (102 A/C)
SB 33-020	03		Embodied
			Lights. Master Warning System (MWS) - To
			inhibit "Green Hydraulic low pressure (LP)
			warning input to Power Flying Control (PFC)
			MWS caption during take-off"
SB 33-020	04		Applicable
			Lights - Master Warning System (MWS) - To
			inhibit "Green Hydraulic low pressure (LP)
			warning input to Power Flying Control (PFC)

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SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			MWS caption during take-off"
SB 33-020	05		Applicable Lights - Master Warning System (MWS) - To inhibit "Green Hydraulic low pressure (LP) warning input to Power Flying Control (PFC) MWS caption during take-off"
SB 33-021			Not applicable
SB 33-021	01		Not applicable
SB 33-021	02		Not applicable
SB 33-021	03		Not applicable
SB 33-022			Applicable Lights. Master Warning System - To introduce a new standard of Control Unit
SB 33-023			No effect Lights. Master warning display unit -To introduce shorter securing bolts
SB 33-024			Embodied Lights. Filament test (Roof panel) - Improved circuit isolation
SB 33-024	01		Embodied Lights. Filament Test (Roof Panel) - Improved circuit isolation
SB 33-024	01	Feb 29/80	Embodied
SB 33-025			Not applicable
SB 33-026		Nov 30/80	Embodied Lights. Filament Test - To clarify diagnosis of essential warning lights
SB 33-026	01		Embodied Lights. Filament Test - To clarify diagnosis of essential warning lights
SB 33-026	02	Aug 30/80	Embodied Lights. Filament Test - To clarify diagnosis of essential warning lights
SB 33-026	03		Embodied Lights. Filament Test - To clarify diagnosis of essential warning lights
SB 33-026	04		Embodied Lights. Filament Test - To clarify diagnosis of essential warning lights
SB 33-026	05		Embodied Lights. Filament Test - To clarify diagnosis of essential warning lights
SB 33-027			No effect Lights. Master warning system (MWS). To

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SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			inhibit the trim master warning on the groun at speeds above 60 knots
SB 33-027	01		No effect Lights. Master warning system (MWS). To inhibit the trim master warning on the groun at speeds above 60 knots
SB 33-027	02		No effect Lights. Master warning system (MWS). To inhibit the trim master warning on the groun at speeds above 60 knots
SB 33A006			No effect Lights -Emergency lighting battery packs

CHAPTER 33

LIGHTS

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GENERAL - DESCRIPTION AND OPERATION

1. General

Aircraft internal illumination is provided by an assortment of fluorescent, filament, electroluminescent, instrument integral, spot and flood lighting.

External lighting comprises landing and taxiing lights, runway turn-off lights, navigation lights and anti-collision lights.

In the flight compartment, a master warning system provides visible warning of failures within associated systems on an overhead display panel.

A visible/audible call system is provided between the flight compartment and stewards' stations, between stewards' stations, and between passenger and stewards to enable a passenger to summon a steward to any seat or toilet.

2. Internal Lighting

Main lighting in the flight compartment is effected by fluorescent tubes mounted in the roof. Crew members' local areas are lit by spotlights and floodlights, in addition to high intensity storm lights for extra illumination of the dash panels to overcome the effects of glare through the windshields.

Control panel engravings are illuminated by associated electroluminescent panels, and instruments by integral lighting.

Each crew member has independent control of his local area lighting, panel lighting and instrument integral lighting.

Passenger cabins, vestibules and toilets are lit by fluorescent or filament lighting, which provides 'bright' or 'dim' illumination respectively, as selected. Passenger entrances are lit by spotlights, fitted close to floor level, one on each side of the forward and centre passenger doors.

Passengers are provided with individual reading lamps mounted on service panels fitted above each row of passenger seats. The service panels also incorporate steward call facilities. Signs in the passenger cabins and in the toilets, when illuminated, inform passengers that seat belts must be fastened, that smoking is forbidden and that passengers in toilets must return to their seats. Other signs, close to each toilet, indicate toilet availability.

Baggage compartments are lit by filament lamps mounted in the roof, and by a baggage compartment door floodlamp fitted close to each baggage compartment door entrance. Landing gear bays and equipment bays are equipped with service (filament) lamps to facilitate maintenance.

Two emergency lighting circuits are incorporated within the internal lighting system, one to provide internal illumination if the a.c. supplies to the main lighting system fails, the other to illuminate essential areas if the aircraft a.c. main supplies and d.c. essential supplies fail.

Spare filaments are stowed in a sliding stowage box (Ref. 25-13-00) fitted in the knee-hole recess between the forward and rear legs of the third crew member's (3CM) station basic structure.

3. External Lighting

One anti-collision lamp is mounted in each wing root leading edge and one in a tail lamp assembly in the tail cone. The three lights flash simultaneously.

One navigation lamp is mounted in the outer leading edge of each wing, and one, comprising two filaments, in the tail lamp assembly, one filament above and one below the tail anti-collision lamp.

Two main landing lamps, one mounted in each wing root leading edge, have retractable/extensible mountings, and when not in use are retracted in the lamp housing. Two land/taxi lamps, similar to the main landing lamps, are attached to the nose landing gear bay doors. The land/taxi lamps extend to an intermediate position for landing, upon which they automatically extend to the full position for taxiing, thus changing the beam angle to compensate for the attitude change.

Two taxi/turn-off lamps, one mounted on each side of the forward fuselage, provide ground illumination to identify runway turn-off points.

4. Flight Compartment Safety Check

Roof panel 4-211:

Pilots' EMERG light switch (mechanically locked)	... OFF
MAIN LANDING LIGHTS switches	... OFF
MAIN LANDING LIGHTS EXTEND/RETRACT switches	... RETRACT
LANDING TAXI LIGHTS switches	... OFF
LANDING TAXI LIGHTS EXTEND/RETRACT switches	... RETRACT

TAXI TURN LIGHTS switches L and R...	OFF
ANTI COLN LIGHTS switch	OFF
NAV LIGHTS switch...	OFF
FASTEN SEAT BELTS switch	OFF
NO SMKG switch	OFF
ROOF LIGHTS switch	ON

Forward steward's control panel, 1-221:

Steward's EMERG light switch (mechanically locked)	NORMAL
VESTIBULE switch	BRIGHT
GROUND SERVICE switch	ON
FWD RACKING switch	ON
BOARDING light switch	ON (Night time only)

Oxygen panel, 20-215:

GRD LIGHTING switch	ON
RKG AREA LTS ROOF switch	ON
RKG AREA LTS INSP switch	OFF

5. Flight Compartment Preparation Check

CAUTION: TO CONSERVE THE LIFE OF THE ELECTROLUMINESCENT (EL) PANELS, ENSURE THAT THE ASSOCIATED EL PANEL LIGHTING CONTROL SWITCHES ARE OFF WHEN PANELS ARE NOT IN USE.

Roof panel, 4-211:

EMERG light switch	OFF - toggle lit
MAIN LANDING LIGHTS switches	OFF
MAIN LANDING LIGHTS EXTEND/RETRACT switches	RETRACT
MAIN LANDING LIGHTS EXTENDED caption ...	Extinguished
LANDING TAXI LIGHTS switches	OFF
LANDING TAXI LIGHTS EXTEND/RETRACT switches	RETRACT
LANDING TAXI LIGHTS EXTENDED caption ...	Extinguished
NAV LIGHTS switch...	As required
ANTI COLN LIGHTS switch	OFF
FASTEN SEAT BELTS switch	OFF
NO SMKG switch	OFF
STEWARD CALL indicator lamp/switch ...	Extinguished
Master warning LTS TEST/CANCEL switch ...	Press to cancel

Forward steward's control panel, 1-221:

EMERG light switch	NORMAL

In the flight compartment, verify:

Roof fluorescent tubes	... Lit
Emergency lights	... Extinguished

In the forward vestibule, verify:

Roof fluorescent tubes	... Lit
Boarding lamps	... Lit
Cabin emergency lights	... Extinguished

LH side switch panel, 12-211:

LH DASH INSTRUMENTS rotary switch...	... OFF
LH AND CENTRE DASH FLOOD rotary switch	... Rotate as required
CHART LIGHT push-switch	... Press for 'on'
CHART LIGHT DIM rotary switch ...	... Rotate as required
COMPASS toggle switch	... As required
STOWAGE FLOOD toggle switch ...	... As required
D/B LIGHT TEST toggle switch ...	... HI (spring-return from TEST)

LH side console, panel 1-211-2:

SIDE CONSOLE rotary switch ...	... OFF
DIGITS rotary switch	... OFF

Roof panel, 4-211:

LIGHTING - STORM rotary switch ...	... OFF
LIGHTING - GLARESHIELD rotary switch	... OFF
LIGHTING - CENTRE CONSOLE PANEL rotary switch	... OFF
LIGHTING - CENTRE DASH rotary switch	... OFF
LIGHTING - CENTRE CONSOLE FLOOD switch	... OFF
LIGHTING - ROOF rotary switch ...	... OFF

RH side switch panel, 5-212:

RH DASH INSTRUMENTS rotary switch...	... OFF
RH DASH FLOOD rotary switch ...	... Rotate as required
CHART LIGHT push-switch	... Press for 'on'
CHART LIGHT DIM rotary switch ...	... Rotate as required
RADAR ALERT (if fitted) toggle switch	... OFF
STOWAGE FLOOD toggle switch ...	... As required
D/B LIGHT TEST toggle switch ...	... HI (spring-

return from TEST)

RH side console, panel 1-212-2:

SIDE CONSOLE rotary switch ...	... OFF
DIGITS rotary switch	... OFF
On panel 6-214, MWS CANCEL push-switch	... Press to cancel

3CM lighting control panel, 11-214:

LIGHTING - SPOT rotary switch ...	... As required
LIGHTING - FLOODS rotary switch ...	... As required
LIGHTING - C/B toggle switch ...	... ON
LIGHTING - PANEL rotary switch ...	... OFF
LIGHTING - DIGITS rotary switch ...	... OFF

Lighting control panel on CB panel, 3-213:

LIGHTING - PANEL toggle switch ...	... OFF
LIGHTING - FLOOD rotary switch ...	... As required

6. Walk Round Check

A. Flight Compartment Main Lighting (Ref. Fig.001 and 002)

LH side panel, 12-211:

LH AND CENTRE DASH FLOOD rotary switch	... Rotate - LH and centre dashboard floodlamps lit dim to bright as selected.
CHART LIGHT push-switch	... Press - LH chart lamp lit.
CHART LIGHT DIM rotary switch	... Rotate - LH chart lamp lit dim to bright as selected.
STOWAGE FLOOD toggle... switch	... ON = LH chart stowage and floor floodlamps lit.

Roof panel, 4-211:

CENTRE CONSOLE FLOOD... rotary switch	... Rotate - centre console floodlamp lit dim to bright as selected.
STORM rotary switch ...	... Rotate - LH, RH and centre dashboard storm floodlamps lit as selected.
ROOF toggle switch ...	... ON - forward roof lamp lit.

RH side switch panel, 5-212:

RH DASH FLOOD rotary... switch	... Rotate - RH dashboard floodlamp lit dim to bright as selected.
CHART LIGHT push-switch	... Press - RH chart lamp lit.
CHART LIGHT DIM rotary switch	... Rotate - RH chart lamp lit dim to bright as selected.
STOWAGE FLOOD toggle... switch	... ON - RH chart stowage and floor floodlamps lit.

3CM lighting control panel, 11-214:

LIGHTING - FLOODS rotary switch	... Rotate - 3CM floodlamps lit dim to bright as selected.
LIGHTING - SPOT rotary switch	... Rotate - 3CM spotlight lit dim to bright as selected.

Circuit breaker panel, 3-213:

LIGHTING - FLOOD rotary switch	... Rotate - 1st super. Floodlamp lit dim to bright as selected.

Oxygen panel, 20-215:

RKG AREA LTS - ROOF ... toggle switch	... ON - racking area roof lamp lit.
RKG AREA LTS - INSP ... toggle switch	... ON - racking inspection lamps lit.

Forward steward's control panel, 1-221:

FWD RACKING toggle switch	... ON - racking area roof lamp lit.

B. Lights Test and Dimming
(Ref. Fig.003 and 004)

NOTE: Each test switch has three positions as follows:-

TEST: associated filaments lit at full brilliance.

HI: associated filaments lit at full brilliance when activated by their own system.

LO: associated filaments lit at reduced

brilliance when activated by their own system.

LH side switch panel, 12-211:

D/B LIGHT TEST toggle switch ...	Controls instrument lighting on LH console, LH dashboard and landing display units on LH and RH forward racking shelves.

Roof panel, 4-211:

LIGHTS TEST toggle ... ... switch	Controls instrument lighting on roof panel, except master warning display.

RH side switch panel, 5-211:

D/B LIGHT TEST toggle ... switch	Controls instrument lighting on RH dashboard and RH console.

Aft centre console, panel 9-211:

LIGHTS TEST toggle ... ... switch	Controls instrument lighting on centre console and centre dashboard.

Brake panel, 12-214:

LIGHTS TEST toggle switch ...	Controls instrument lighting on 3CM forward panels.

Lower electrical panel, 6-214:

LIGHTS TEST CTR toggle ... switch	Controls instrument lighting on 3CM centre panels.
LIGHTS TEST AFT toggle ... switch	Controls instrument lighting on 3CM aft panels.

C. Master Warning System (Ref. Fig. 005)

Master warning display panel, 4-211:

LTS TEST/CANCEL	Press and hold - all

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push-switch	master warning filaments lit. Release - all filaments out. (NOTE: Filaments lit before test are now cancelled).
INHIBIT push-switch ...	... Press and release - both inhibit lamps lit.
RECALL push-switch ...	... Press and release - inhibit lamps out. Master warning lights now indicate correct system status.

Lower electrical panel, 6-214:

MWS CANCEL push-switch	... Press and release - all master warning caption filaments are extinguished.

D. Panel Lighting (Ref. Fig.006 and 007)

CAUTION: TO CONSERVE THE LIFE OF THE ELECTROLUMINESCENT (EL) PANELS, ENSURE THAT THE ASSOCIATED EL PANEL LIGHTING CONTROL SWITCHES ARE OFF WHEN PANELS ARE NOT IN USE.

Roof panel, 4-211:

CENTRE CONSOLE PANEL... rotary switch	... Rotate - EL panels on centre console lit.
GLARESHIELD rotary ... switch	... Rotate - EL panels on centre glareshield lit.
CENTRE DASH rotary ...	... Rotate - EL panels on centre dash panel lit.
ROOF rotary switch ...	... Rotate - EL panels on roof panel lit.

LH side switch panel, 12-211:

LH DASH INSTRUMENTS ... rotary switch	... Rotate - EL panels on LH dash panel lit.

LH side console panel, 1-211-2:

SIDE CONSOLE rotary ... switch	... Rotate - EL panel on side console and on side switch panel lit.

LH side panel, 5-212:

RH DASH INSTRUMENT rotary switch ...	Rotate - EL panels on RH dash panel lit.

RH side console panel, 1-212-2:

SIDE CONSOLE rotary switch	Rotate - EL panel on side console and on side switch panel lit.

3CM lighting control panel, 11-214:

PANEL rotary switch	Rotate - EL panels at 3CM station lit.
C/B toggle switch	ON - lighting bars on circuit breaker panels in zone 213 lit.

Circuit breaker panel, 3-213:

PANEL toggle switch	On - local EL panel and oxygen EL panel 20-215 lit.

E. Instrument Lighting (Ref. Fig.008 and 009)

Roof panel, 4-211:

CENTRE CONSOLE PANEL rotary switch ...	Rotate - instruments integral lighting on centre console lit dim to bright as selected.
GLARESHIELD rotary switch	Rotate - instruments integral lighting on centre glareshield lit dim to bright as selected.
CENTRE DASH rotary switch	Rotate - instruments integral lighting on centre dash panel lit dim to bright as selected.
ROOF rotary switch	Rotate - instruments integral lighting on roof panel lit dim to bright as selected.

LH side switch panel, 12-211:

COMPASS toggle switch ...	DIM - compass in windscreen centre pillar lit at reduced brilliance. BRIGHT - compass lit

	at full brilliance.
LH DASH INSTRUMENTS ... rotary switch	... Rotate - instruments integral lighting on LH dash panel lit dim to bright as selected.

LH side console, panel 1-211-2:

SIDE CONSOLE rotary ... switch	... Rotate - instruments integral lighting on LH side console lit dim to bright as selected.
DIGITS rotary switch...	... Rotate - digital display in LH dash panel and digital display (if fitted) in centre glareshield lit as selected.

RH side switch panel, 5-212:

RH DASH INSTRUMENTS ... rotary switch	... Rotate - instruments integral lighting on RH dash panel lit dim to bright as selected.

RH side console, panel 1-212-2:

SIDE CONSOLE rotary ... switch	... Rotate - instruments integral lighting on RH side console lit dim to bright as selected.
DIGITS rotary switch...	... Rotate - digital display in RH dash panel and digital display (if fitted) in centre glareshield lit as selected.

3CM lighting control panel, 11-214:

PANEL rotary switch ...	... Rotate - instruments integral lighting at 3CM station lit dim to bright as selected.

Circuit breaker panel, 3-213:

PANEL toggle switch ...	... ON - station box, 7-213, and headset jack box,

20-215, Lit.

F. Passenger Cabin Main Lighting (Ref. Fig. 010)

Forward steward's control panel, 1-221:

LIGHTING CONTROLS - ... MAIN CABIN FWD toggle switch	... MAIN
FWD SELECT toggle switch	... FULL - wall and roof fluorescent tubes in forward cabin lit. CEILING - only roof fluorescent tubes in forward cabin lit. WALL - only wall fluorescent tubes in forward cabin lit.
MAIN CABIN FWD toggle switch	... DIM - only filament lamps in forward cabin lit.
MAIN CABIN AFT toggle switch and SELECT AFT toggle switch	... As above, but for rear cabin.

G. Toilet Lighting

There are no individual switches, but when ground power connected	... All fluorescent tubes in each toilet are lit regardless of toilet door position.

H. Boarding and Vestibule Lighting (Ref. Fig. 011)

Forward steward's control panel, 1-221:

LIGHTING - VESTIBULE... toggle switch	... DIM - filament lamps in vestibule lanterns lit. BRIGHT - filament lamps extinguished, fluorescent tubes in vestibule lanterns lit.
BOARDING toggle switch	... ON - boarding lamps at forward passenger door lit.

Centre steward's control panel, 1-223:

LIGHTING - VESTIBULE toggle switch ... BRIGHT - fluorescent tubes in centre vestibule lantern lit.
DIM - fluorescent lights extinguished; filament lamps in vestibule lantern lit.

BOARDING toggle switch ... ON - boarding lamps at centre passenger door lit.

Rear steward's control panel, 1-241:

LIGHTING - VESTIBULE... toggle switch ... BRIGHT - fluorescent tubes in rear vestibule lantern lit.
DIM - fluorescent lights extinguished; filament lamps in vestibule lantern lit.

I. Passenger Reading Lights (Ref. Fig. 012)

Passenger service unit, above each passenger seat:

Reading lamp switch ... ... Press and release - associated reading lamp lit. Press and release again - reading lights extinguished.

J. Passenger Signs (Ref. Fig. 013)

Roof panel, 4-211:

NO SMKG toggle switch ... ON - 'no smoking' signs in cabins illuminated, indicator lamp on each steward's panel lit, exit signs illuminated (Ref. Fig.20) and low tone signal relayed through PA system.
OFF - signs and indicator lights extinguished and low tone signal relayed through PA system.

FASTEN SEAT BELTS ... toggle switch ... ON - 'fasten seat belts' signs illuminated,

indicator lamp on each steward's panel lit, low tone signal relayed through PA system and 'return to cabin' sign in each toilet illuminated.
OFF - signs and indicator lights extinguished and low tone signal relayed through PA system.

Forward toilet 'toilet occupied' signs:

Operated by toilet door microswitch ... ... Toilet door closed and bolted - forward 'toilet occupied' sign illuminated. Door unbolted - sign light extinguished.

Centre toilets 'toilet occupied' signs:

All toilet door microswitches ... ... All centre toilet doors closed and bolted - centre 'toilet occupied' signs illuminated. One toilet door open - sign lights extinguished.

K. Call Systems (Ref. Fig.014 and 015)

Roof panel, 4-211:

STEWARD CALL push-switch ... Press and release - tone signal audible through PA system, indicator lamp on each steward's panel and the cabin call ceiling lamps lit.

Forward steward's call panel and centre and rear steward's control panels, 2-221, 1-223 and 1-241:

FLIGHT DECK CANCEL push-switch ... ... Press and release - indicator lights on steward's panels and cabin call ceiling lights extinguished.

FLIGHT DECK CALL push-switch ... ... Press and release - STEWARD CALL indicator

		lamp on roof panel, 4-211, lit and then extinguished.
CABIN CREW CALL push-switch		Press and release - tone signal relayed through PA system in vestibule areas.

Passenger service unit (PSU), above passenger seats:

Forward cabin PSU call push-switch	...	Press and release - knob lit, tone signal audible in vestibule areas, CABIN CALL indicator lamps on forward and centre steward's panels lit and ceiling indicator lamps in forward cabin lit. Press and release again - all associated indicator lights extinguished.
Rear cabin PSU call ... push-switch	...	Press and release - knob lit, tone signal audible in vestibule areas, CABIN CALL indicators on centre and rear steward's panel lit and ceiling indicators in rear cabin lit. Press and release again - all associated indicator lights extinguished.

Forward toilet:

Steward call push-switch	...	Press and release - knob lit, tone signal audible in vestibule areas, TOILET indicator on each steward's panel lit, ceiling indicator lamps lit and indicator lamp outside the toilet door lit. Press and release indicator lamp outside the toilet door - all associated indicator lights extinguished.

Centre toilets:

Steward call push-switch ... Press and release - knob lit, tone signal audible in vestibule areas, TOILET indicators on each steward's panel lit, ceiling indicator lamps lit, and indicator lamp outside the toilet door lit. Press and release indicator lamp outside the toilet door - all associated lights extinguished.

L. Baggage Compartment Lighting (Ref. Fig. 016)

Forward baggage compartment door open. Light switched 'on' ... Baggage compartment roof lamps and door flood lamp lit.
Light switch 'off' ... ... Light extinguished.
Rear baggage compartment door open. Light switch 'on' ... Baggage compartment roof lamps and door floodlamp lit.
Light switch 'off' ... ... Lights extinguished.

M. Service Lighting

Oxygen panel, 20-215:

GRND LIGHTING control toggle switch ... ON - all service lamps lit.

Refuelling panel access door:

Open ... ... Door floodlamp lit and instruments on panel integrally lit.

N. Navigation Lights (Ref. Fig. 017)

Roof panel, 4-211:

NAV toggle switch ... ... ON - wing and tail navigation lamps lit.

O. Anti-collision Lights (Ref. Fig. 017)

Roof panel, 4-211:

ANTI COLN toggle switch ... ON - wing and tail anti-collision lamps

show flashing red light working synchronously.

P. Main Landing Lights (Ref. Fig. 018)

CAUTION: DO NOT LEAVE LANDING LAMPS LIT FOR MORE THAN 5 min IN ANY 10 min PERIOD.

Roof panel, 4-211:

MAIN LANDING EXTEND/... RETRACT toggle switches	... Both EXTEND - lamps travel to fully extend position. EXTEND caption illuminated.
MAIN LANDING LIGHTS ... toggle switches	... Both ON - both landing lamps lit.
MAIN LANDING EXTEND/... RETRACT toggle switches	... RETRACT - both landing lights and EXTENDED caption light extinguished. Both lamps retract into their housings.
MAIN LANDING LIGHTS ... toggle switch	... OFF

Q. Land/Taxi and Turn-off Lights (Ref. Fig. 019)

CAUTION: DO NOT LEAVE LAND/TAXI LAMP LIT FOR MORE THAN 5 min IN ANY 10 min PERIOD.

Roof panel, 4-211:

LANDING TAXI EXTEND/... RETRACT toggle switches	... Both EXTEND - lamps travel to fully extended (taxi) position. EXTENDED caption illuminated.
LANDING TAXI LIGHTS ... toggle switches	... Both ON = taxi filament in both lamps lit.
LANDING TAXI EXTEND/... RETRACT toggle switches	... RETRACT - both landing taxi lights and EXTENDED caption light extinguished. Both lamps retract into their housings.
LANDING TAXI LIGHTS ... toggle switches	... OFF
TAXI/TURN L and R ... lights control toggle	... ON - associated taxi turn-off lamp lit.

switches ... OFF.

R. Emergency Lighting (Ref. Fig. 020)

CAUTION: ALL CHECKS WITH 6 V EMERGENCY LIGHTING MUST BE COMPLETED AS SOON AS POSSIBLE TO CONSERVE THE LIFE OF THE BATTERIES.

Forward steward's control panel, 1-221:

EMERG toggle switch ... ... NORMAL.

Roof panel, 4-211:

LIGHTS EMERG toggle switch... OFF - toggle lit.
ARM - toggle light extinguished.

Forward steward's control panel, 1-221:

EMERG toggle switch ... ... Press and hold at TEST - 6 V filaments in emergency lamps, lanterns and exit signs lit.
Release switch to NORMAL - all emergency filaments extinguished.

Roof panel, 4-211:

LIGHTS EMERG toggle switch... ON - 6 V filaments in emergency lamps, lanterns and exit signs lit.
OFF - all 6 V emergency lights extinguished.

Forward steward's control panel, 1-221:

EMERG toggle switch ... ... ON - 6 V filaments in emergency lamps, lanterns and exit signs lit.
NORMAL - 6 V filament lights extinguished.

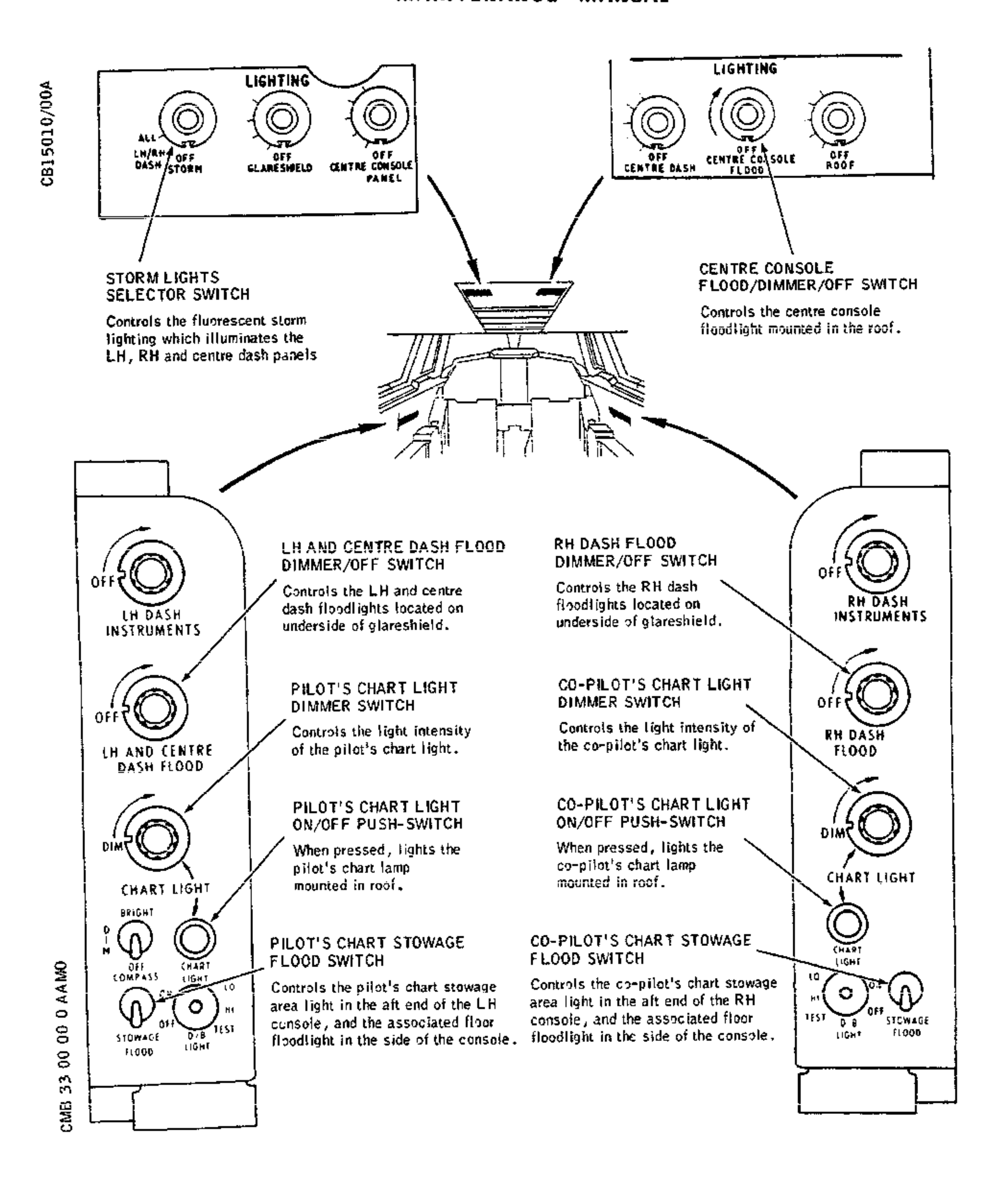
Roof panel, 4-211:

LIGHTS EMERG toggle switch... OFF - toggle lit, all emergency lights

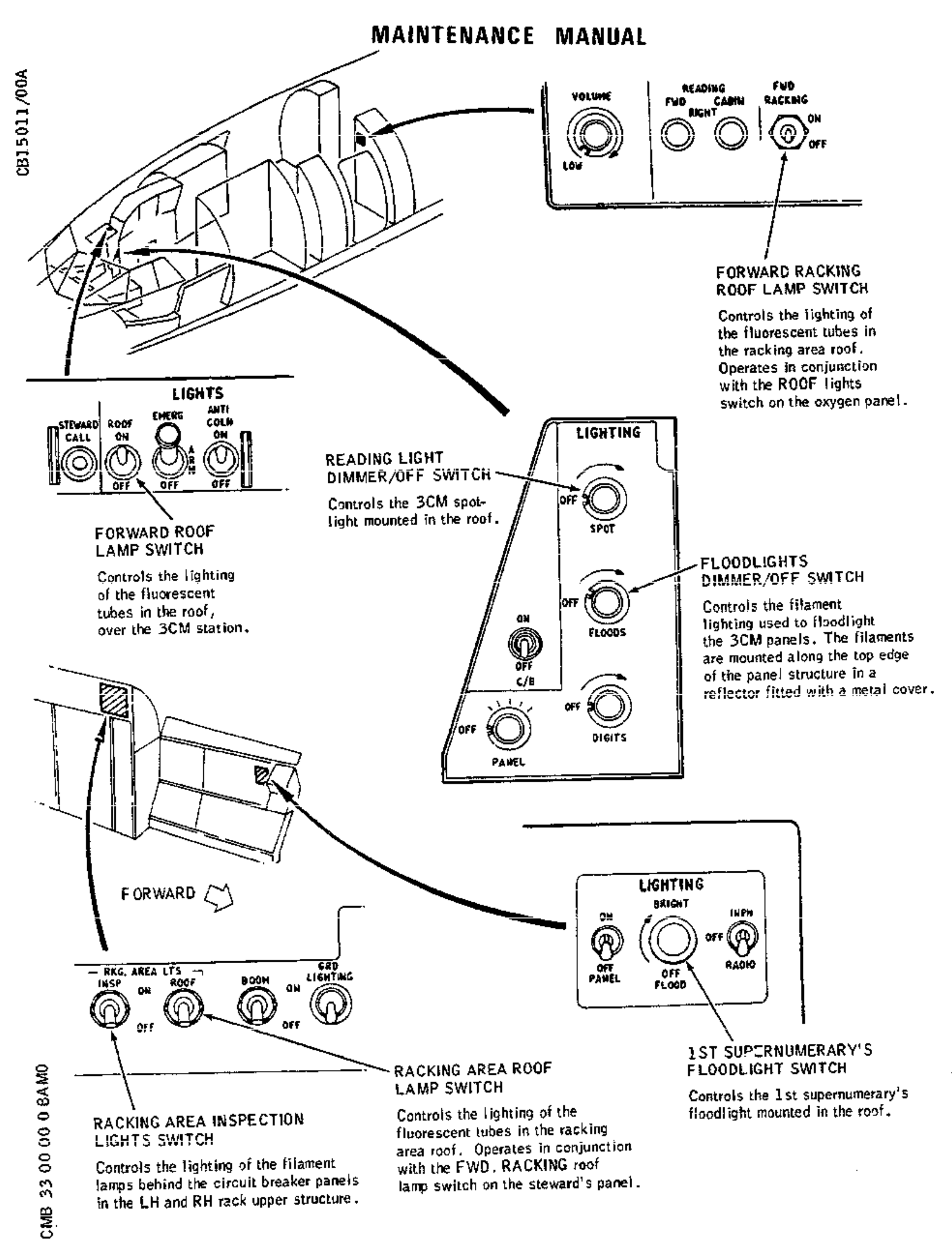
		extinguished.
NO SMKG toggle switch	...	ON - 28 V filaments in exit signs and vestibule exit signs lit. OFF - filament lights in signs extinguished.

7. Sub-system Management (Ref. Figs.001 to 020)

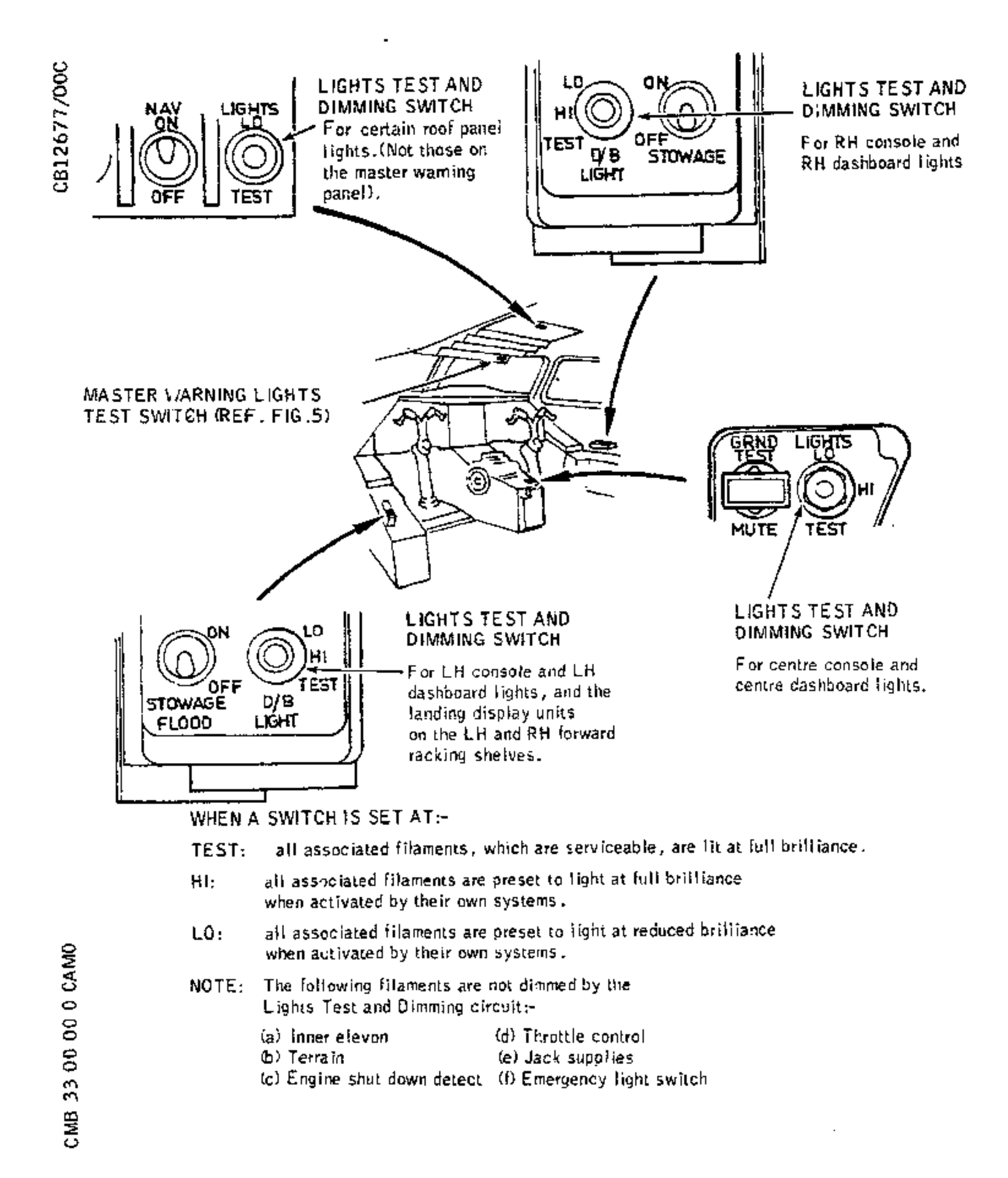
Management procedures for internal and external lighting, master warning, call systems and warning signs, which enable systems to be operated, either to prove the system or for servicing purposes, are carried out at switches on panels in the flight compartment, on each steward's panel, on passenger service units and at each toilet. To enable these procedures to be carried out, electrical ground power must be connected and switched on as detailed in 24-41-00.



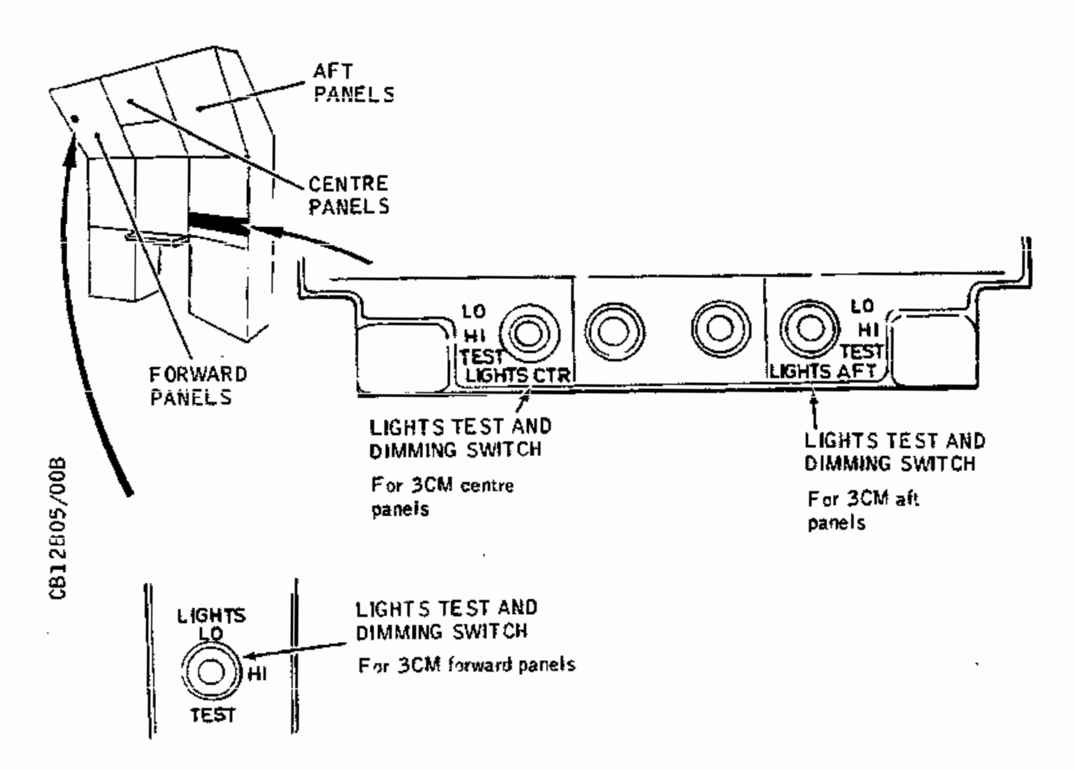
Sub-system Management
(Main Lighting, Flight Compartment Forward)
Figure 001



Sub-system Management
(Main Lighting, Flight Compartment Rear)
Figure 002



Sub-system Management
(Lights Test and Dimming, Flight Compartment Forward)
R Figure 003



WHEN A SWITCH IS SET AT:-

TEST: all associated filaments, which are serviceable, are lit at full brilliance.

HI: all associated filaments are preset to light at full brilliance when activated by their own systems.

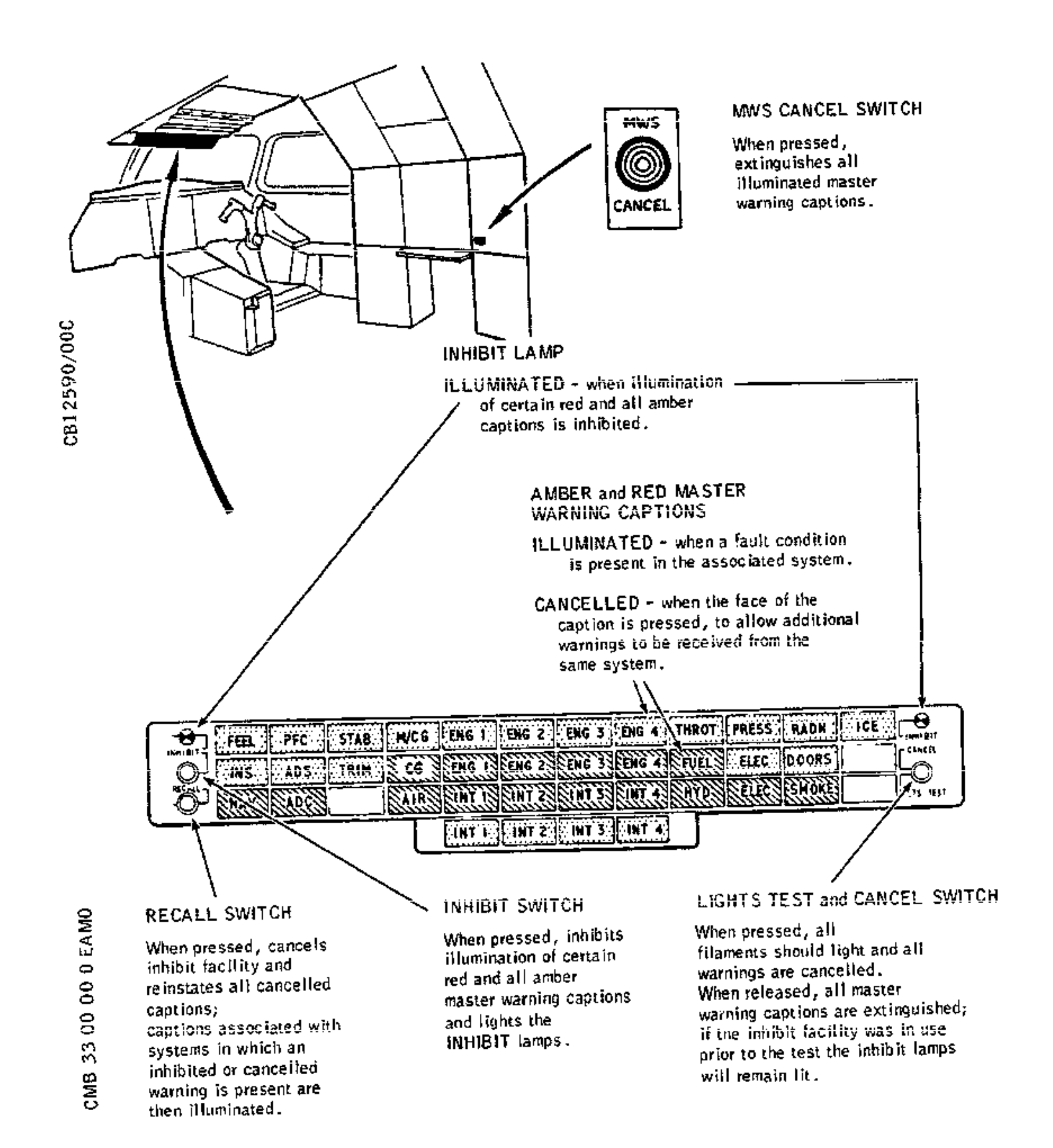
LO: all associated filaments are preset to light at reduced brilliance when activated by their own systems.

NOTE: The following filaments are not dimmed by the Lights Test and Dimming circuit:-

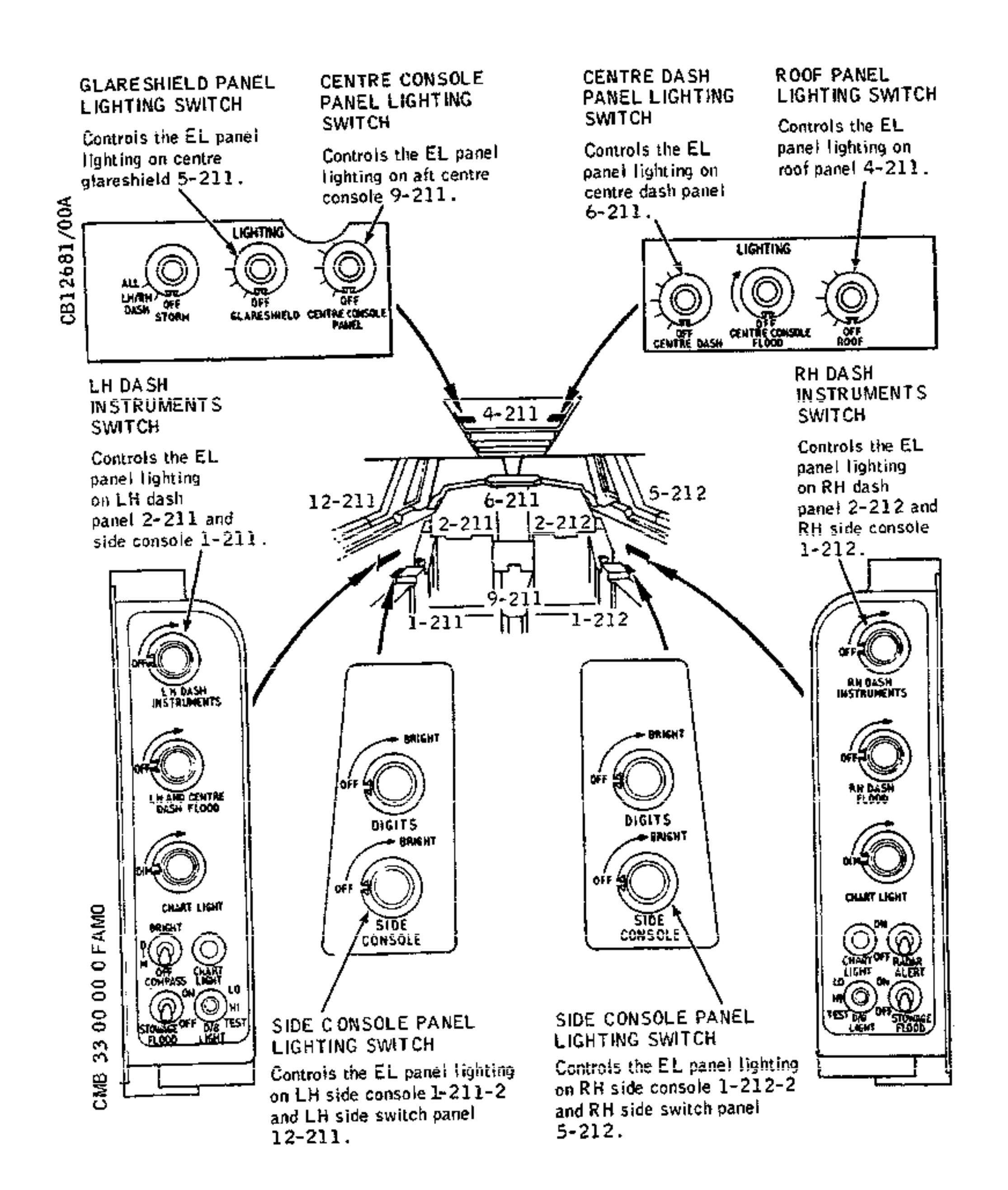
(a) Engine starting control
(b) Torching flame detection
(c) Fuel flow
(d) Engine feed LP shut

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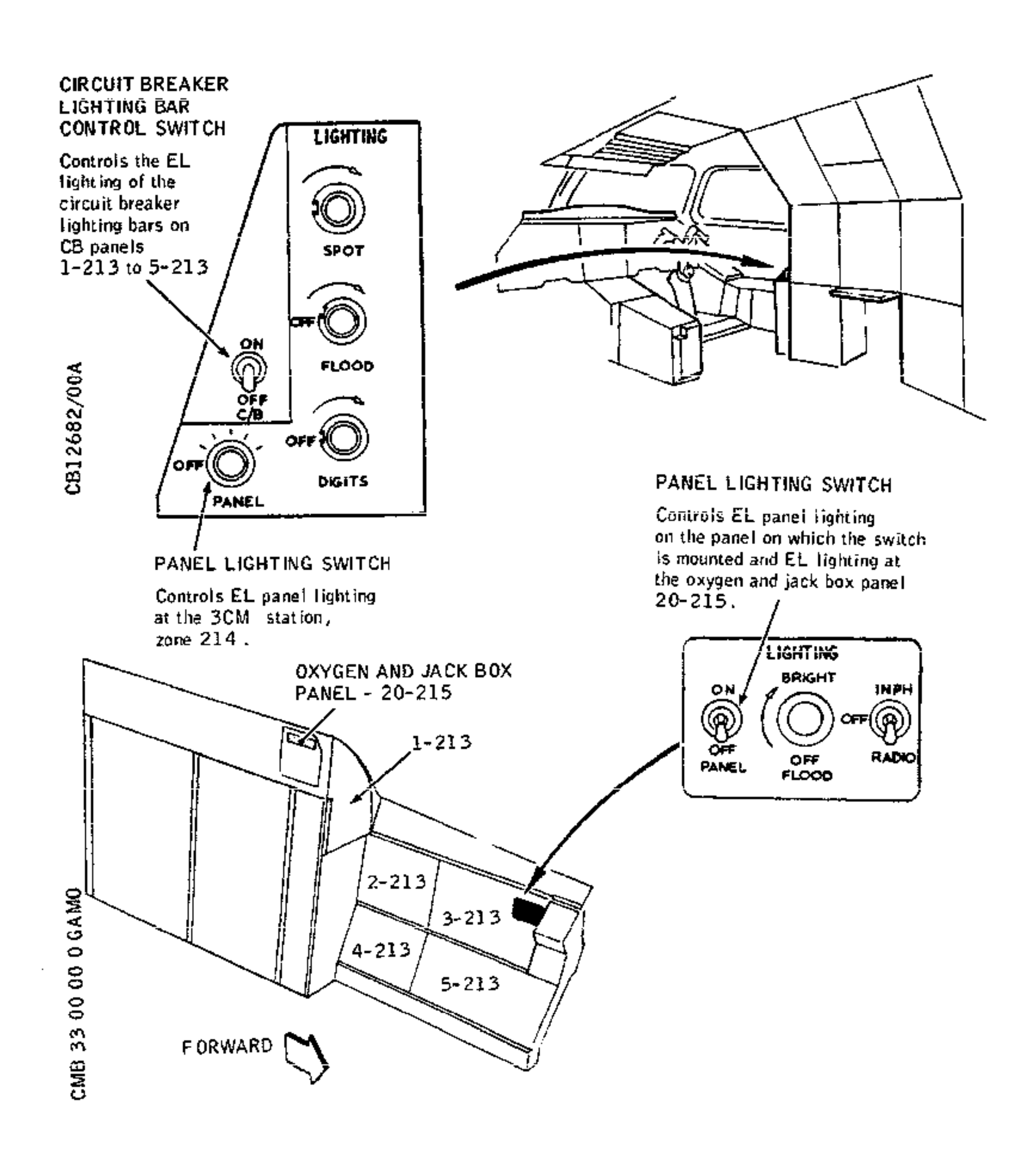
Sub-system Management
(Lights Test and Dimming, Flight Compartment Rear)
Figure 004



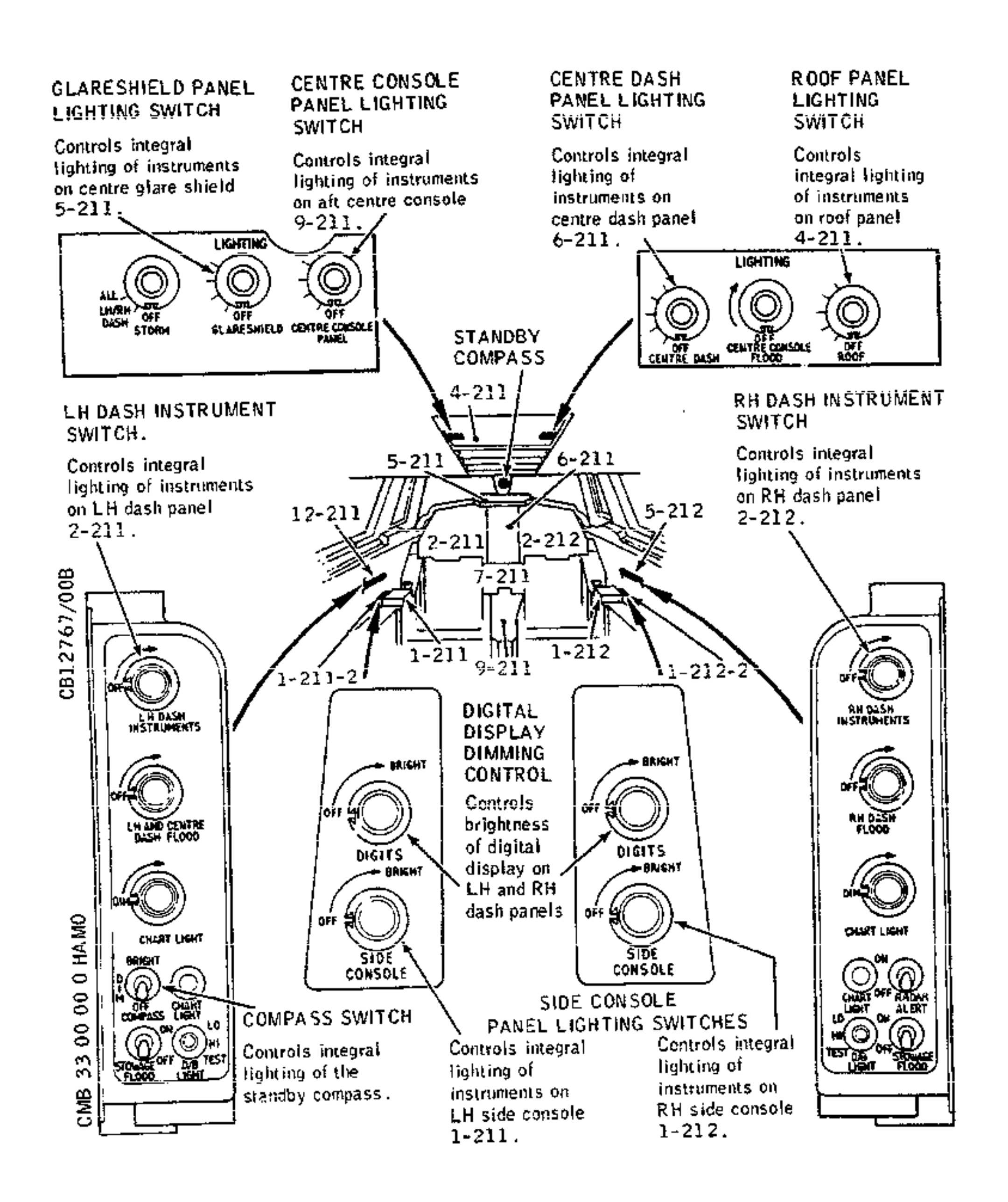
- Sub-system Management (Master Warning)
Figure 005



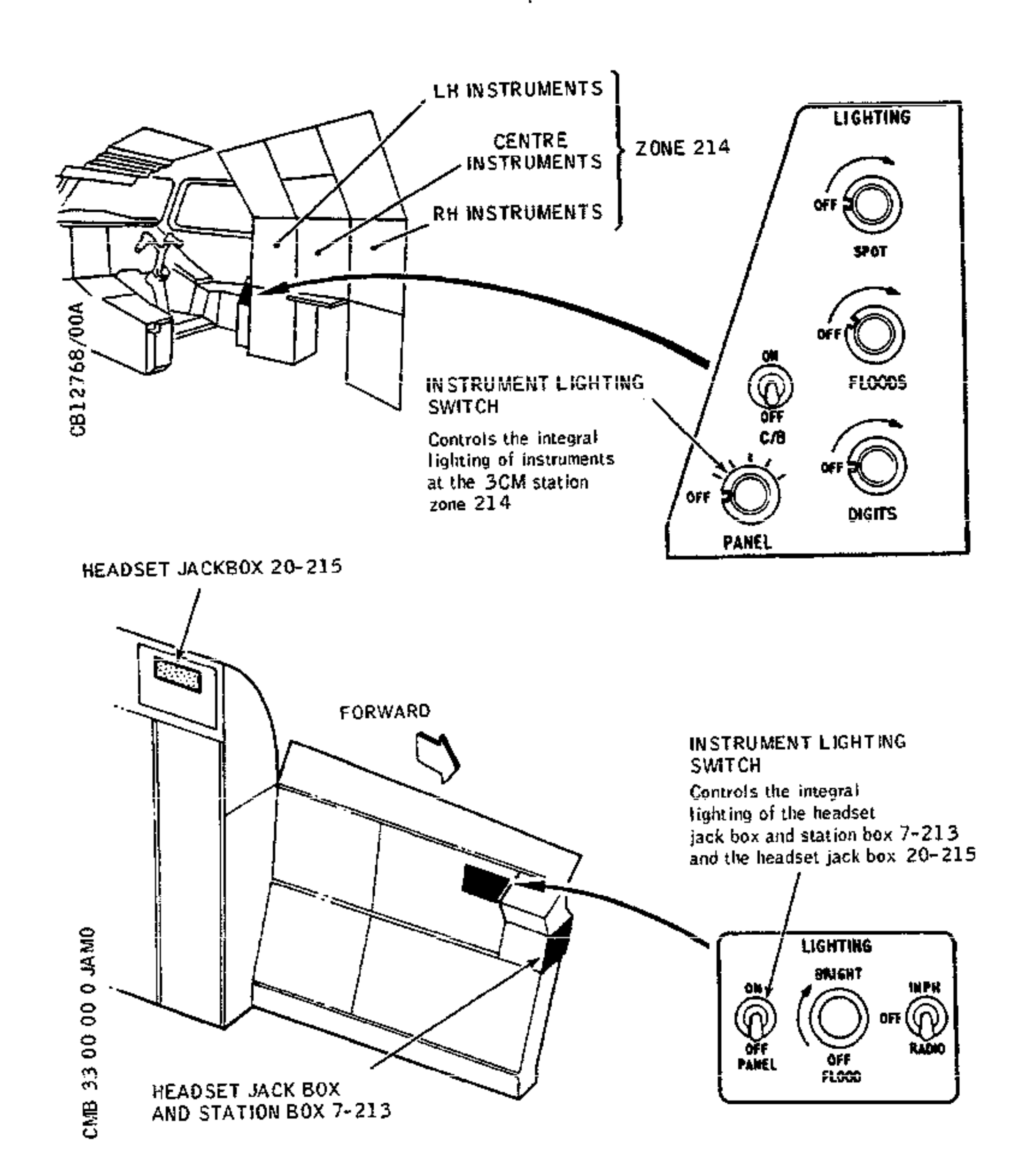
Sub-system Management
(Panel Lighting, Flight Compartment Forward)
Figure 006



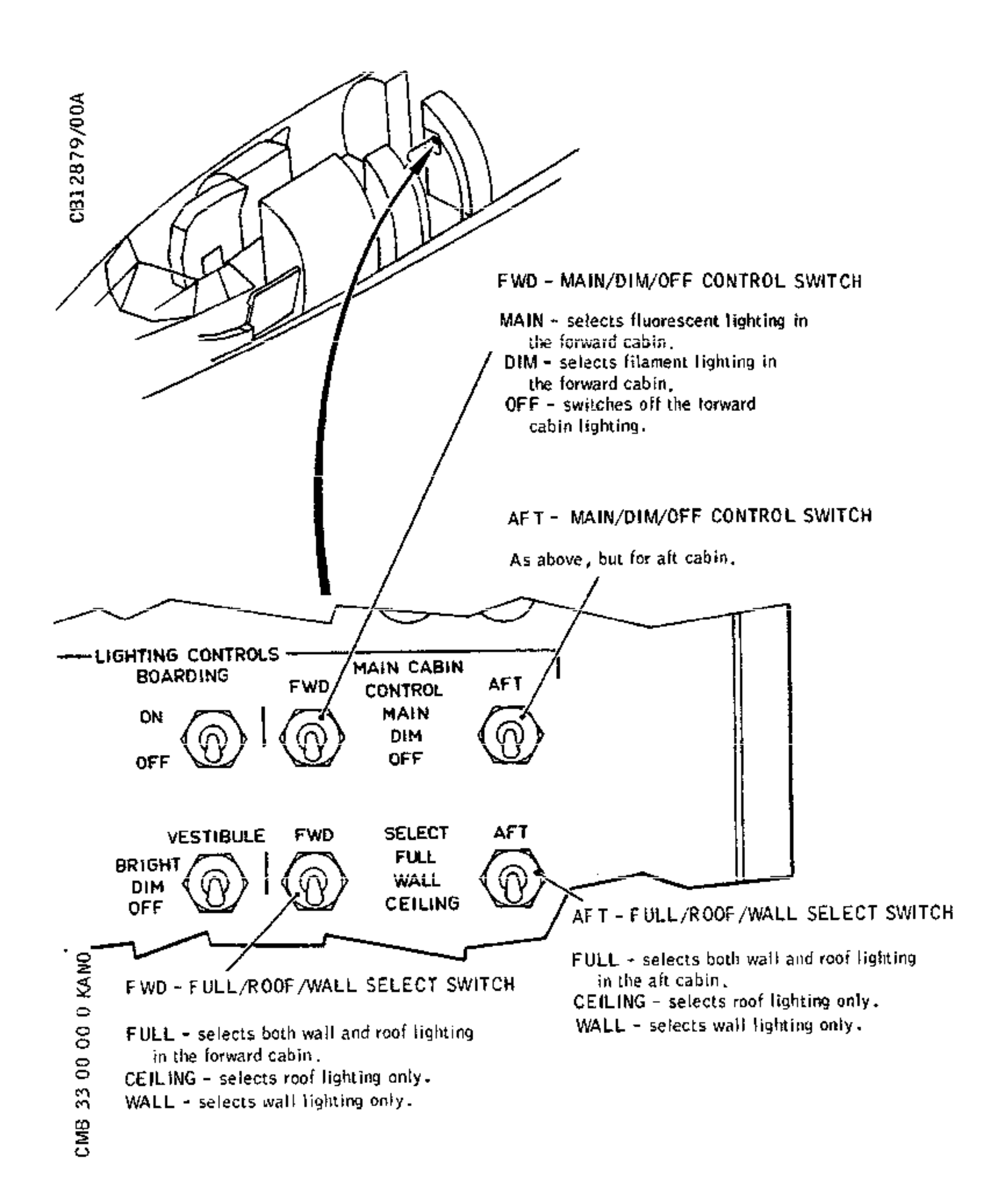
Sub-system Management
(Panel Lighting, Flight Compartment Rear)
Figure 007



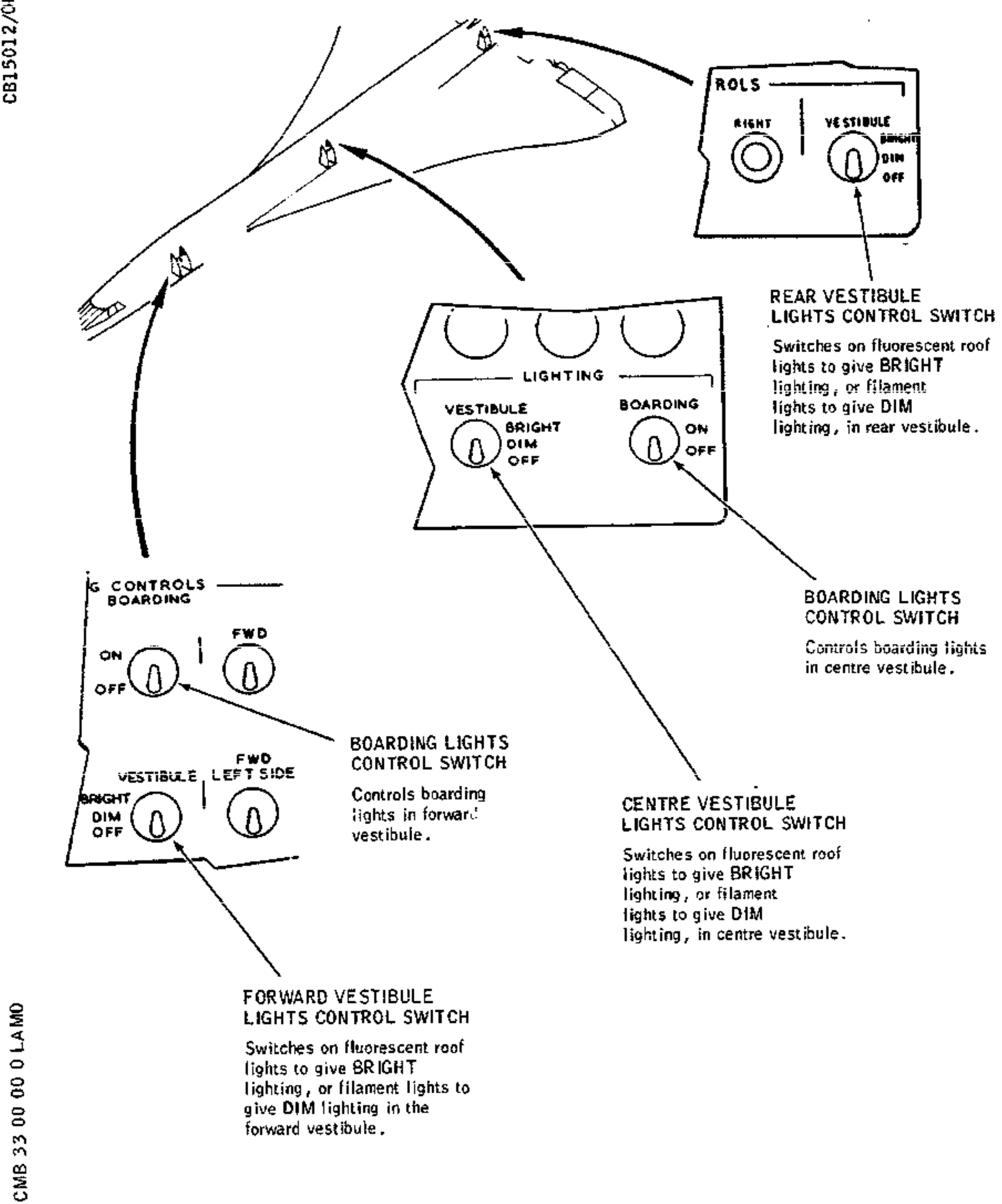
Sub-system Management
(Instrument Lighting, Flight Compartment Forward)
Figure 008



Sub-system Management
(Instrument Lighting, Flight Compartment Rear)
Figure 009

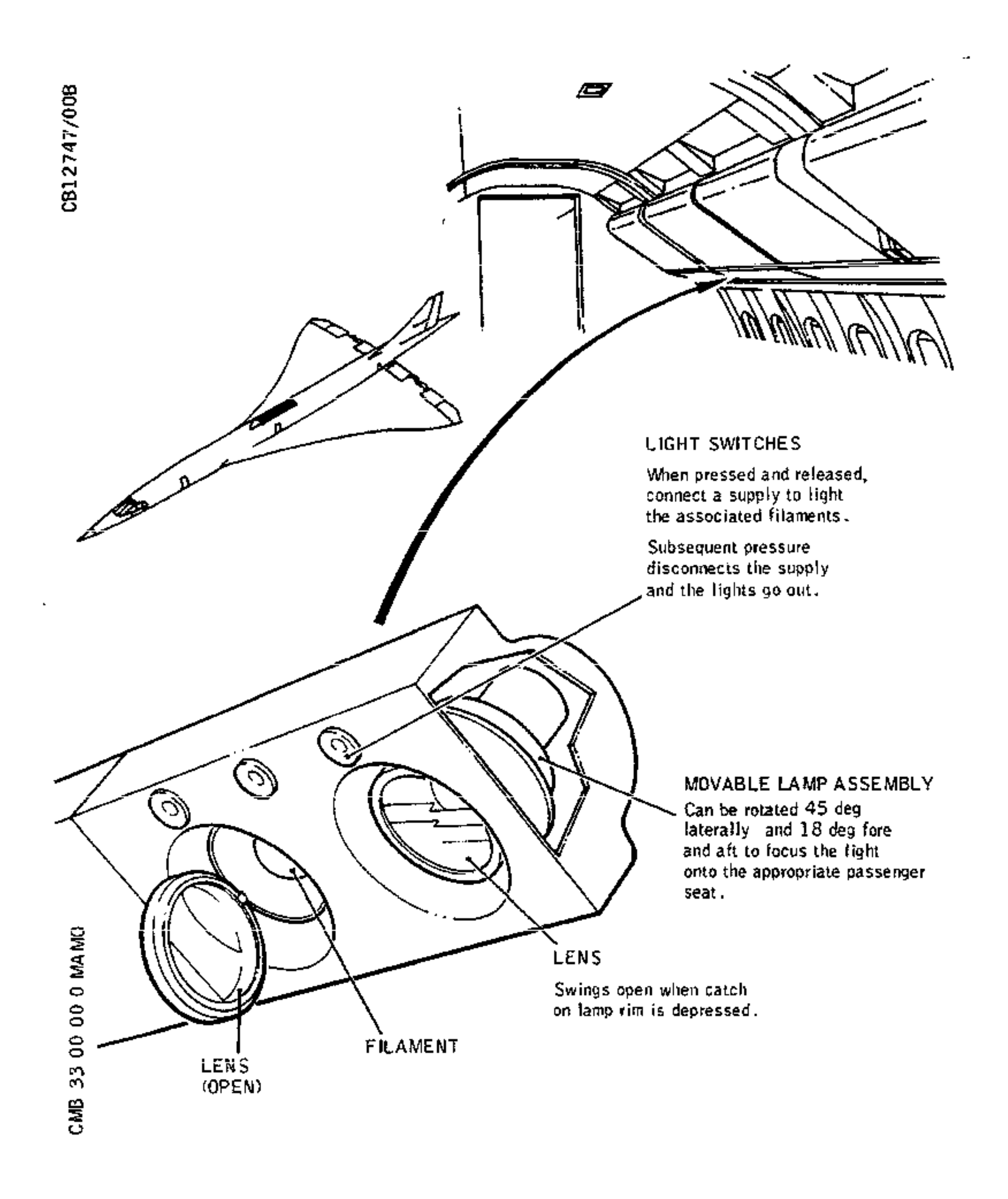


Sub-system Management
(Main Lighting, Passenger Compartments)
Figure 010

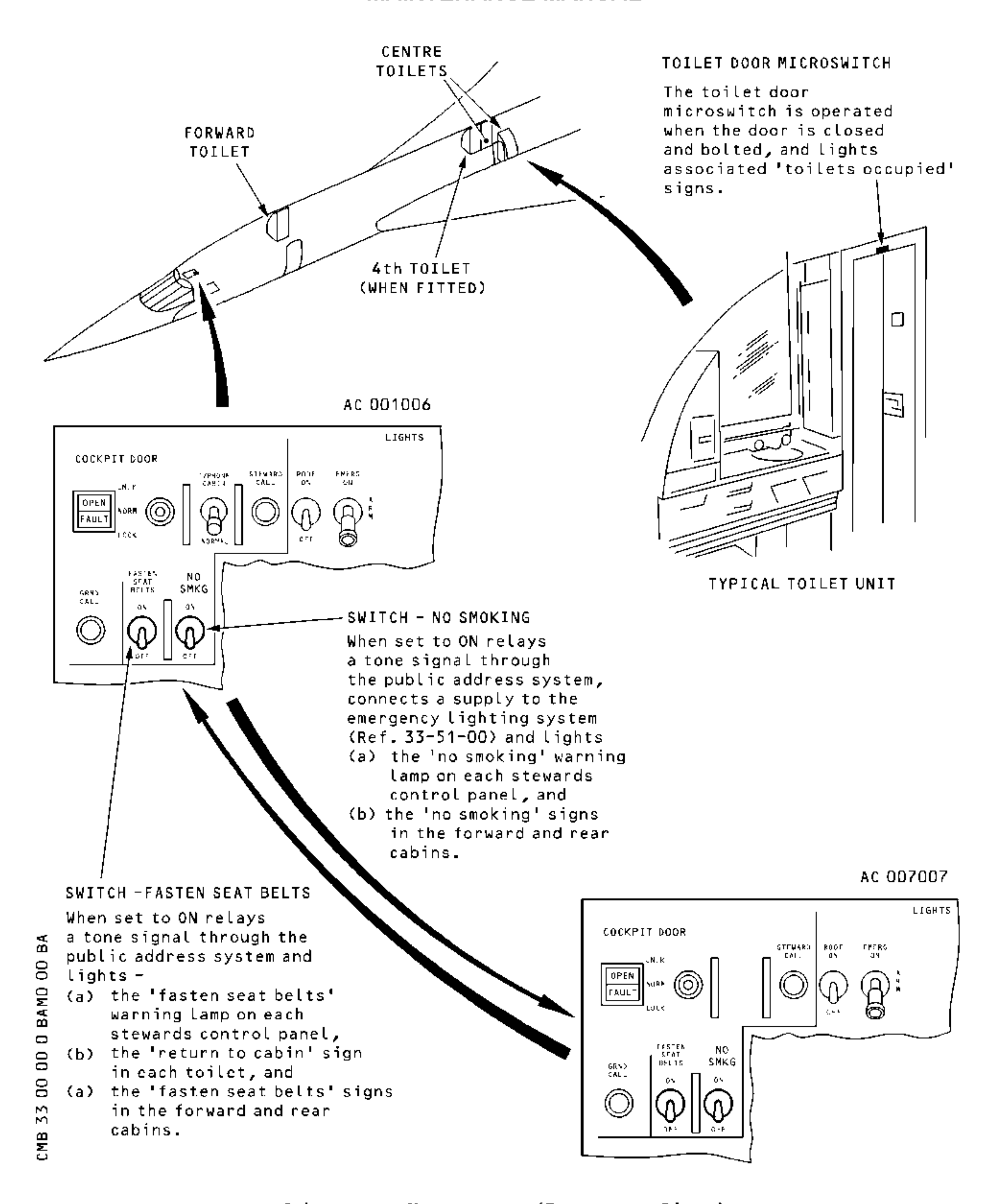


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Sub-system Management
(Boarding and Vestibule Lighting)
Figure 011

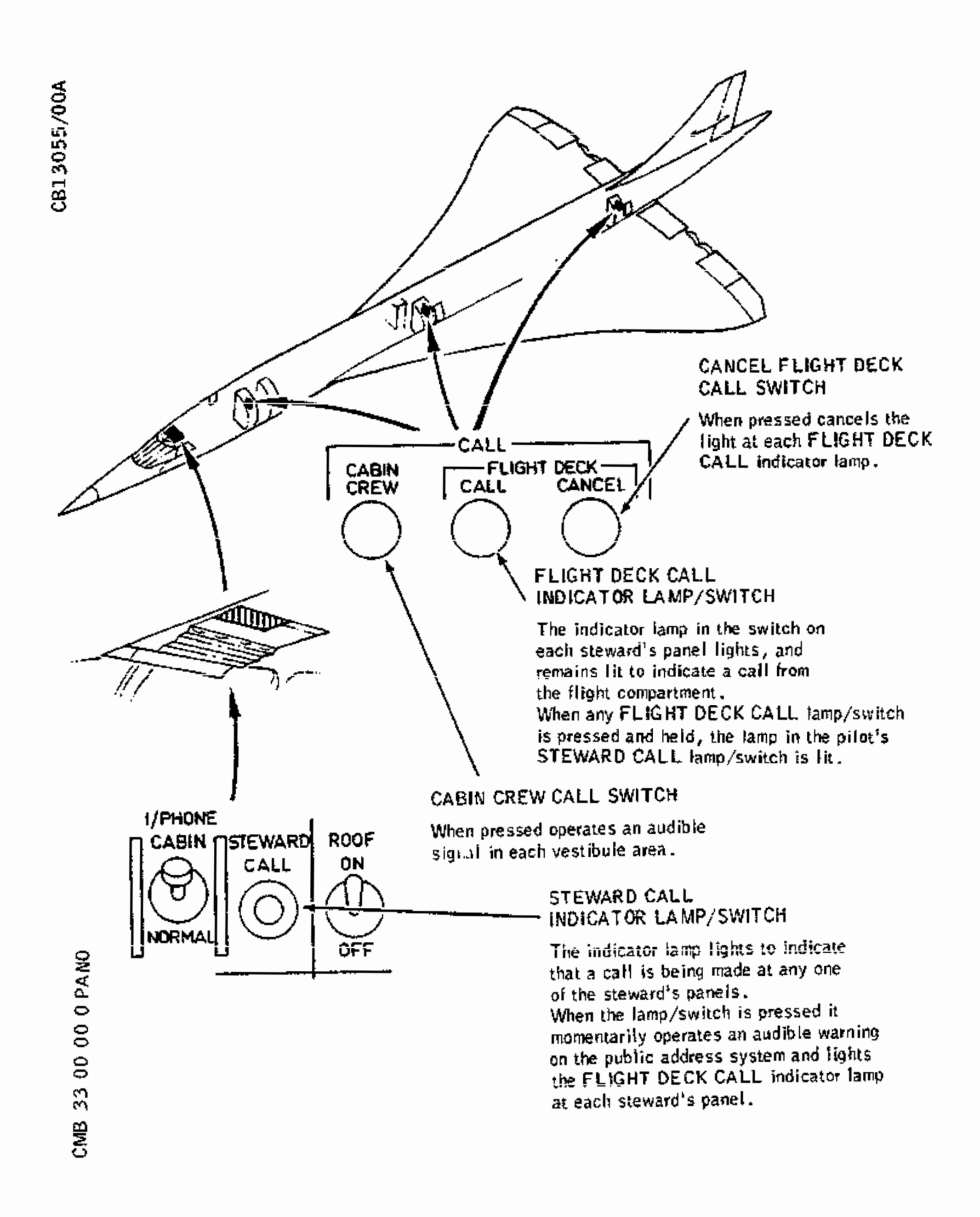


- Sub-system Management (Passenger Reading Lights)
Figure 012

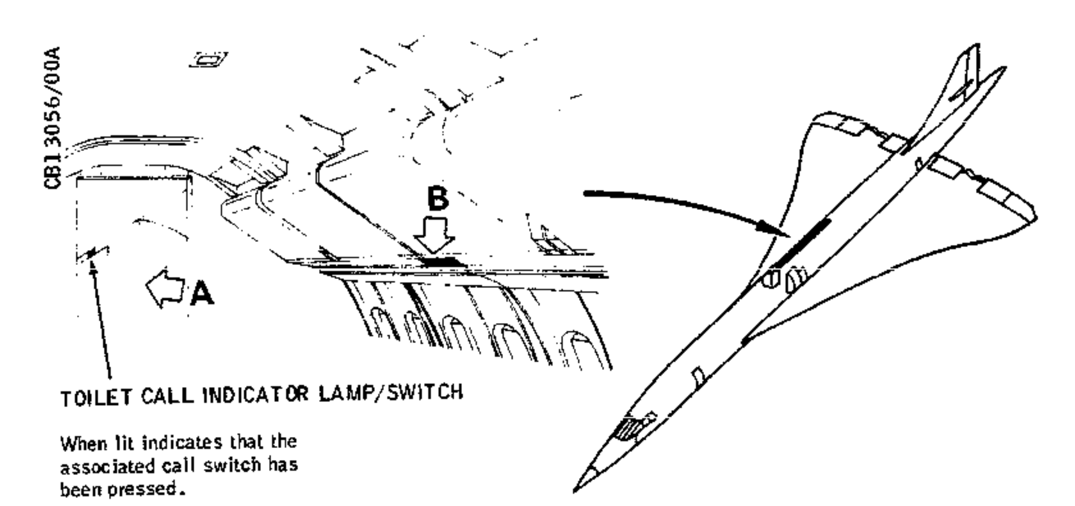


Sub-system Management (Passenger Signs)
Figure 013

R



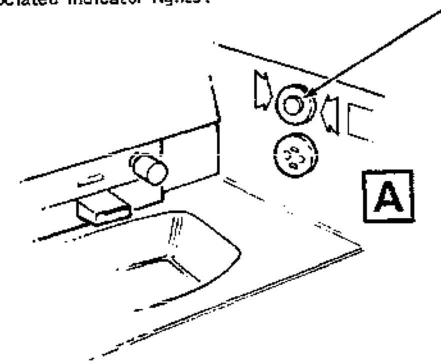
- Sub-system Management (Call Systems, Crew-to-Crew)
Figure 014



TOILET CALL INDICATOR LAMP/SWITCH

When lit indicates that the associated call switch has been pressed.

When pressed cancels all associated indicator lights.



STEWARD CALL INDICATOR/LAMP/SWITCH

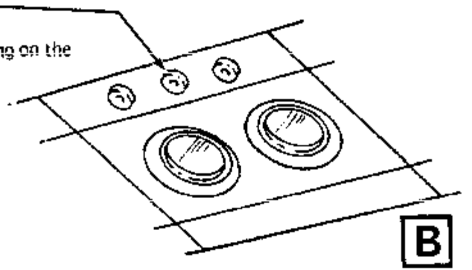
Mounted on the console unit in each toilet; when pressed momentarily, operates an audible warning on the public address system and lights indicator lamps in the -
(1) toilet call indicator lamp/switch outside the toilet door,
(2) forward and rear cabin ceiling,
(3) forward, centre and rear steward's panels.

These indications continue until the toilet call indicator lamp/switch outside the toilet door is pressed.

PASSENGER CALL INDICATOR LAMP/SWITCH

When pressed momentarily, operates an audible warning on the public address system and lights indicator lamps in the -
(1) switch knob,
(2) forward or rear cabin ceiling as appropriate,
(3) forward or rear steward's panel as appropriate,
(4) centre steward's control panel.

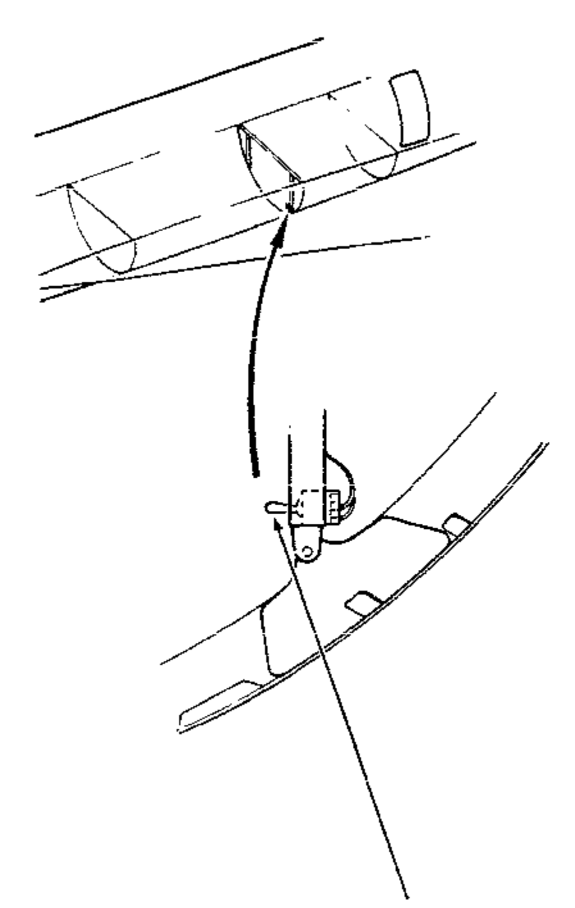
These indications continue until the illuminated passenger call switch is again pressed.

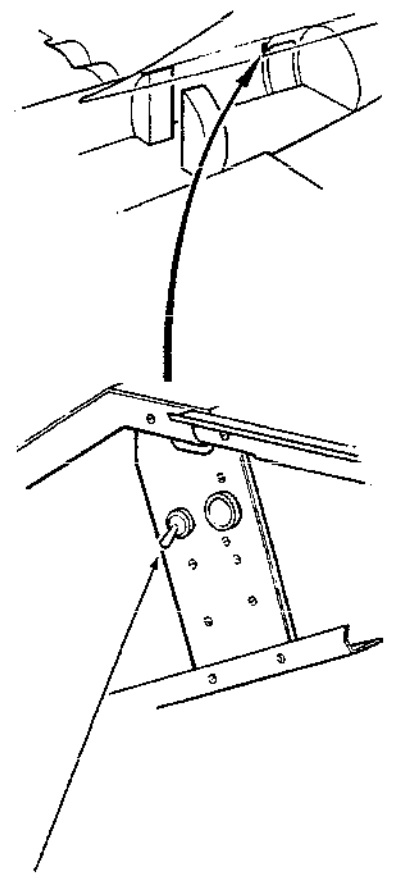


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Sub-system Management
(Call Systems, Passenger-to-Crew)
Figure 015

CB15014/00A





FORWARD BAGGAGE COMPARTMENT LIGHT CONTROL SWITCH

Controls the forward baggage compartment roof lights and the door floodlight when baggage compartment door is open.

REAR BAGGAGE COMPARTMENT LIGHT CONTROL SWITCH

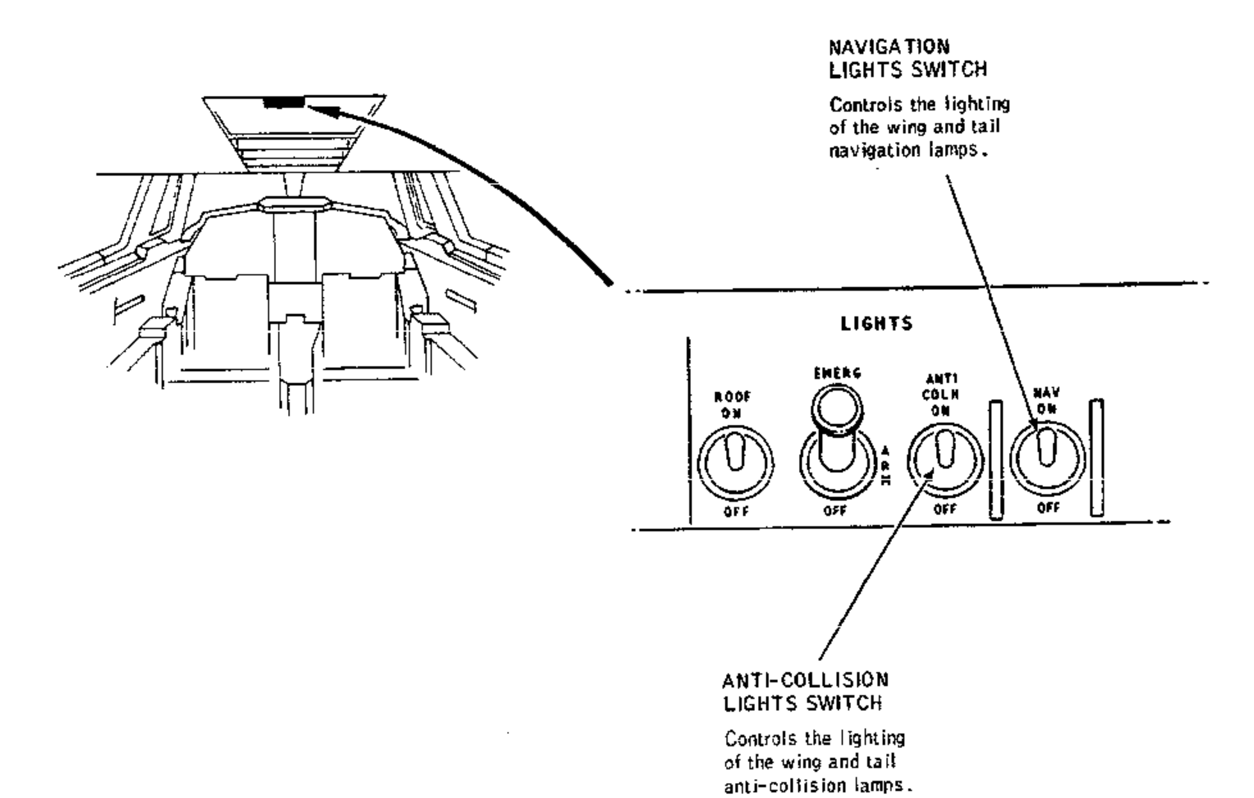
Controls the rear baggage compartment roof lights and the door floodlight when baggage compartment door is open.

CMB 33 00 00 0 SAMO

Sub-system Management
(Baggage Compartment Lighting)
Figure 016

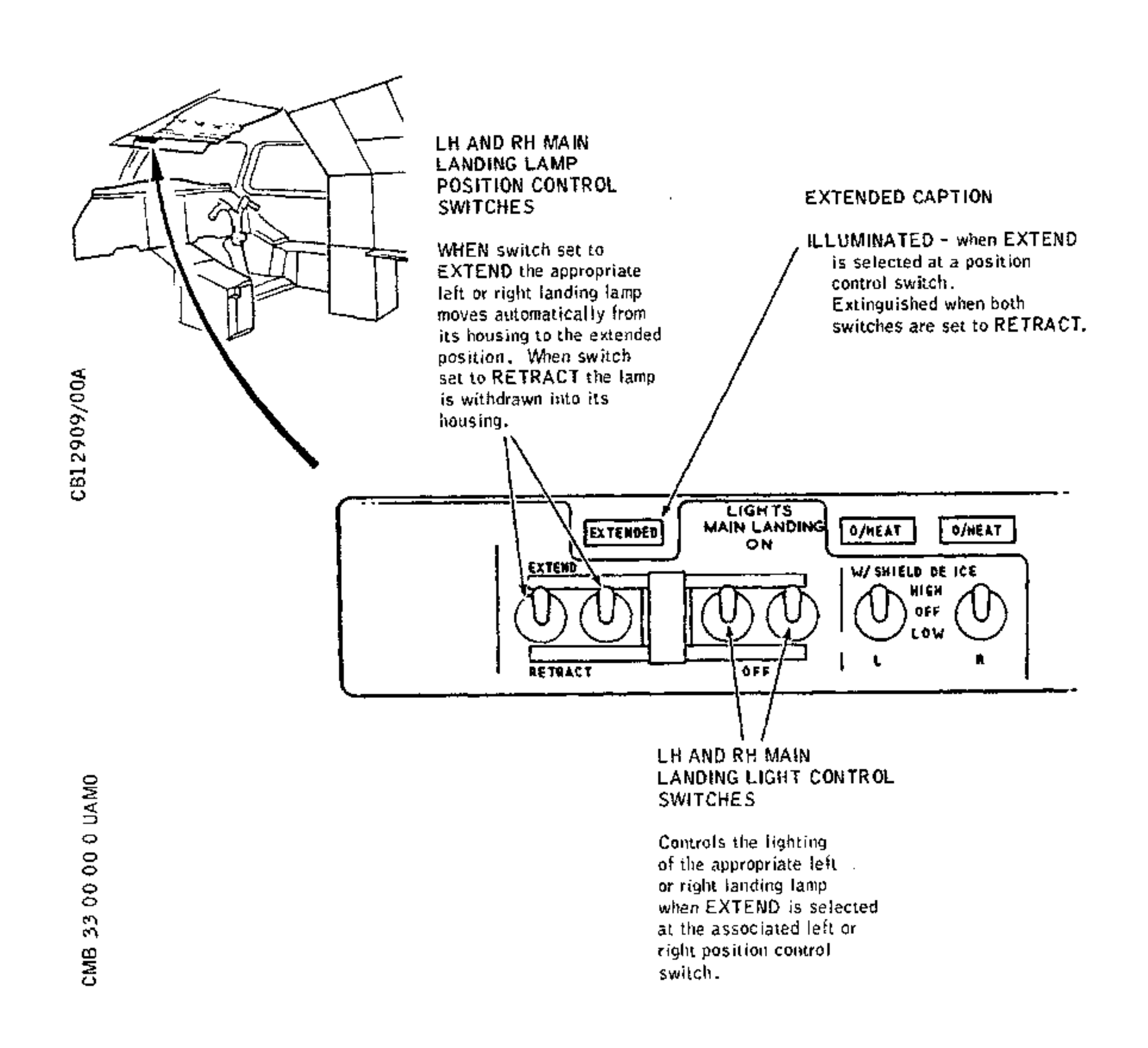
Printed in England

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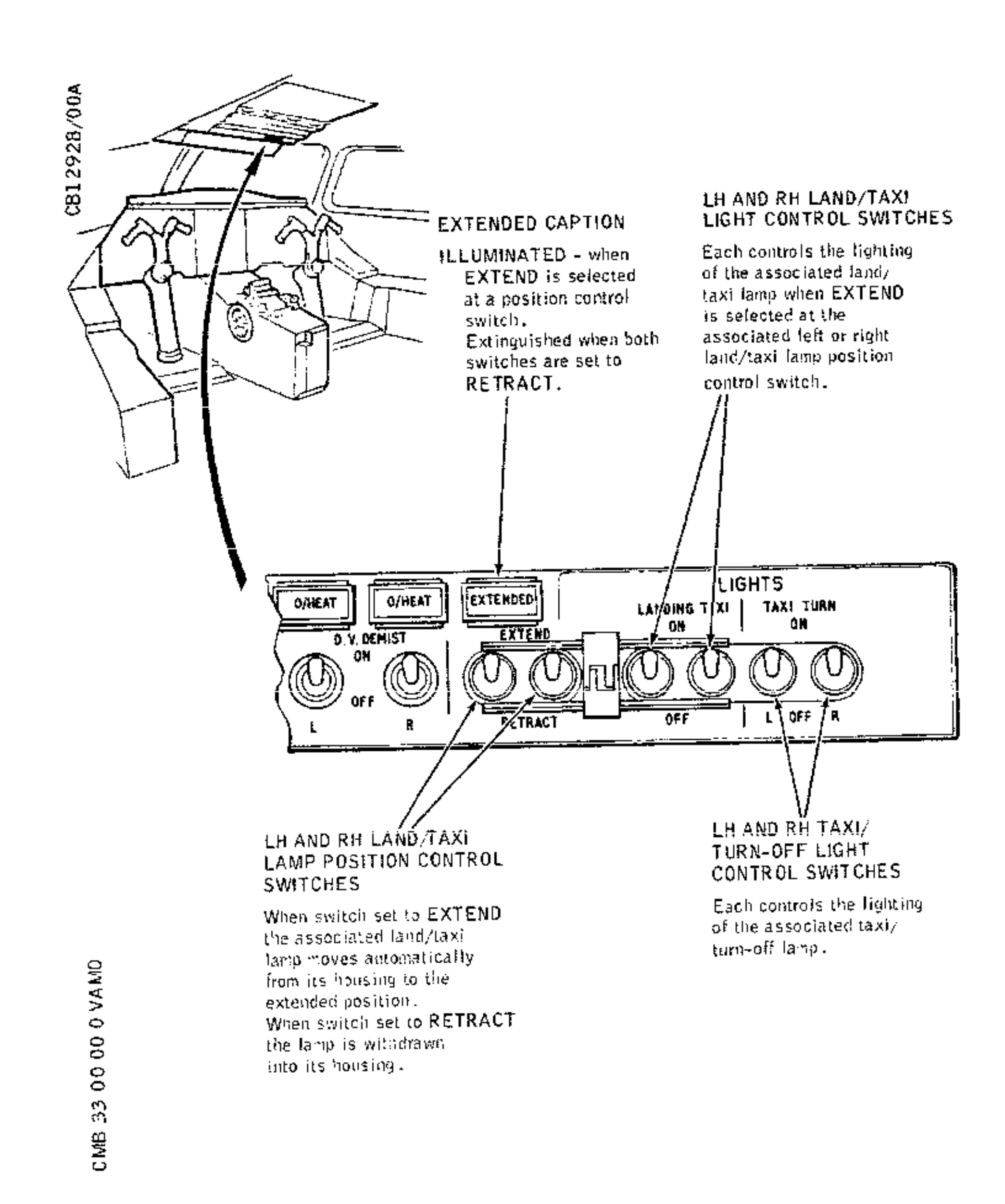


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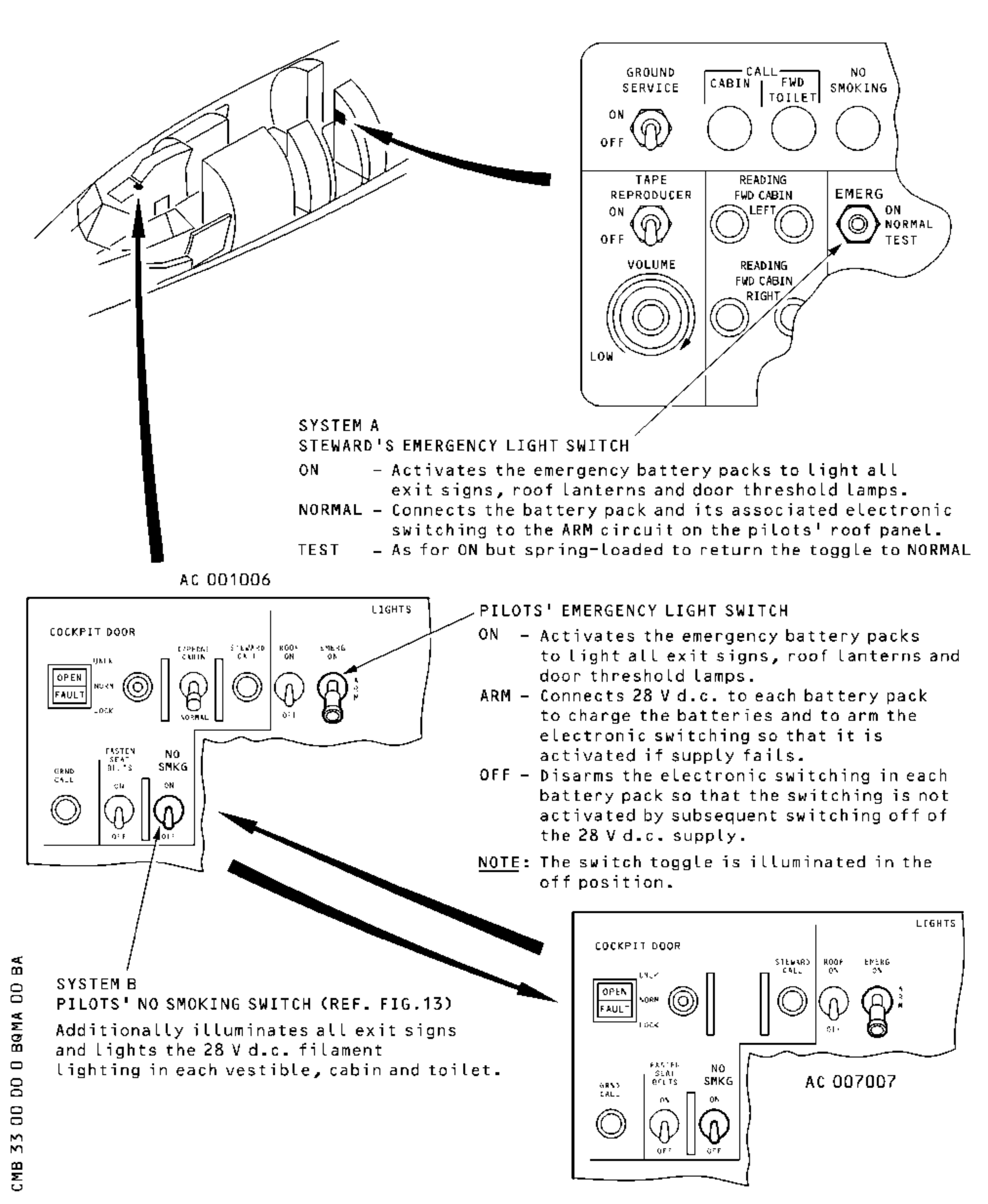
Sub-system Management
(Navigation and Anti-Collision Lights)
Figure 017



- Sub-system Management (Main Landing Lights)
Figure 018



R - Sub-system Management (Land/Taxi and Turn-off Lights)
Figure 019



Sub-system Management (Emergency Lighting)
Figure 020

R

GENERAL - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

This topic contains general instructions for the removal and installation of sub-system control switches, and landing lamp and land/taxi lamp caption light modules, with the legend EXTENDED, that are fitted to the flight compartment roof panel.

All switches are mounted from the rear of the roof panel, access being gained by lowering the appropriate section of the panel on its hinges (Ref. Chap.31) or by releasing the quick-release fasteners and withdrawing the panel sub-assembly from its mounting to the extent of the cables. Caption light modules are mounted from the front of the panel and clamped to the panel from the rear.

Electrical connections to toggle switches and push-switches are made to screw-type or socket-type terminals, to rotary switches by flying leads, and to caption light modules by socket-type terminals.

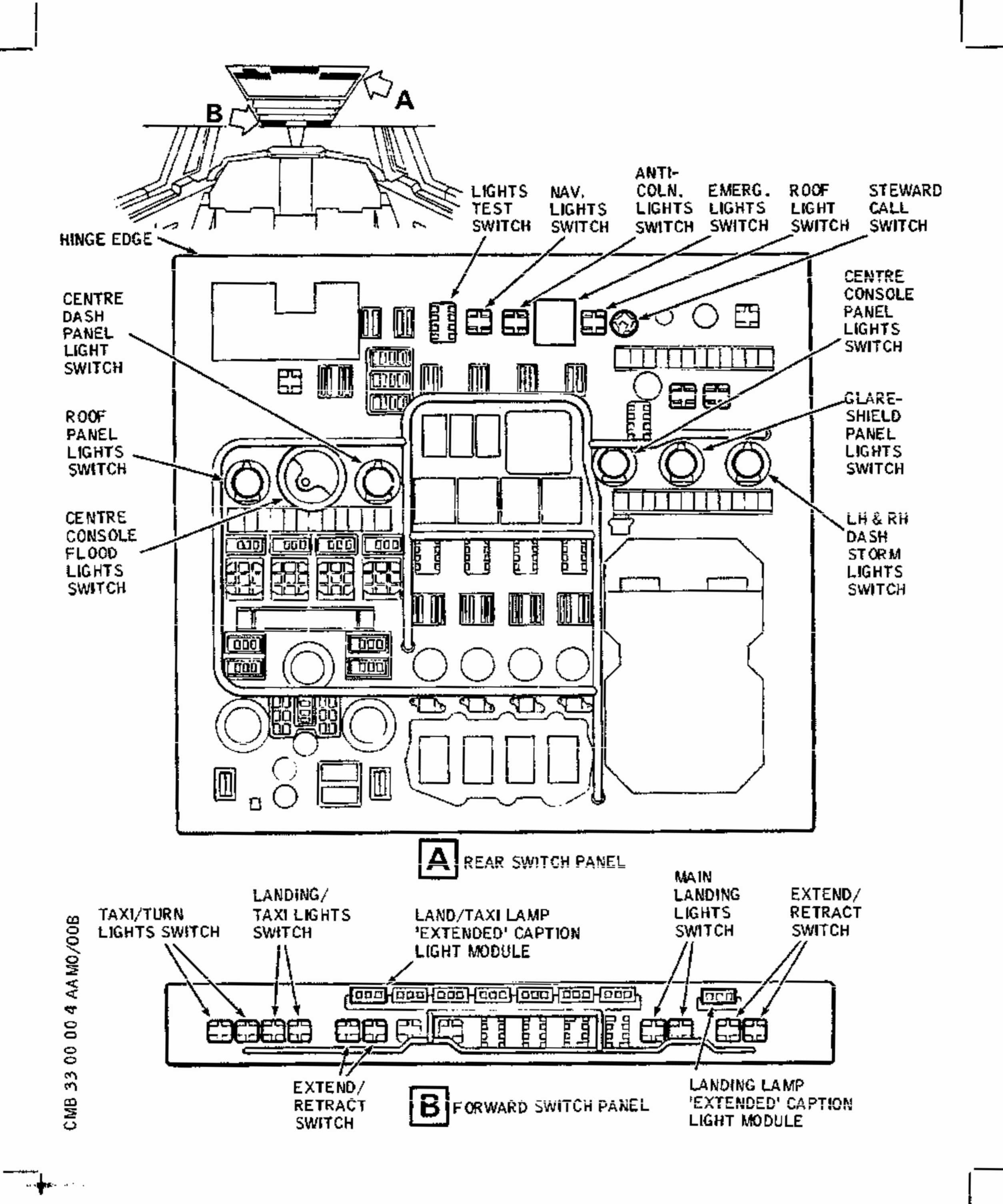
Cable formers, which also act as panel stiffeners, on the rear of the roof panel, support the cable looms, tag boards and terminal blocks which may restrict access to terminals or connectors. Tag boards and terminal blocks may be temporarily moved to allow easier access.

R A heat shield comprising two sections encloses the body of
R the centre console floodlight dimmer/off switch. One
R section is bolted to the cable former on the rear of the
R switch panel and the other section to the adjacent diode
R board.

2. Switches and Caption Light Modules - Flight Compartment Roof Panel (Ref. Fig.402 and 403)

CAUTION: ELECTROLUMINESCENT PANELS ARE VULNERABLE TO DAMAGE BY SCRATCHING AND CRACKING. ENSURE THAT TOOLS USED IN THE FOLLOWING OPERATIONS DO NOT DAMAGE THE POLISHED WALLS OF THE ELECTROLUMINESCENT PANEL.

A. Equipment and Materials



- Flight Compartment Roof Panel (4-211) -
Diagrammatic Rear View
Figure 401

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) For switches on the rear switch panel, isolate the electrical generation and external power supplies as detailed in 24-00-00, Servicing. For switches and caption light modules on the forward switch panel, trip all the circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG LT CONT	13-215	L21	B11
LH LDG LT CONT	14-216	L22	D8
LDG LTS POSN IND	15-216	L23	A12
RH LDG LT SUP	13-215	L24	C12
LH LDG LT SUP	14-216	L25	C8
LH LDG/TAXI LT CONT	14-215	L41	E11
RH LDG/TAXI LT CONT	13-216	L42	B9
LDG/TAXI LTS POSN IND	15-215	L43	A13
LH LDG/TAXI LT SUP	14-215	L45	E10
RH LDG/TAXI LT SUP	13-216	L46	B8
TAXI/TURN OFF LTS CONT	15-216	L44	B13
RH TAXI/TURN OFF LT SUP	15-216	L48	B12

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH TAXI/TURN OFF LT SUP	15-215	L47	A14
LH W/SCREEN HTR CONT	1-213	1H142	J9
RH W/SCREEN HTR CONT	15-216	2H142	B17
LH FLAT VISOR HTR CONT	15-215	1H222	C11
LH BOTTOM AND CURVED VISOR HTR CONT	15=215	1H224	C12
RH FLAT VISOR HTR CONT	15-216	2H222	C15
RH BOTTOM AND CURVED VISOR HTR CONT	15-216	2H224	C16
LH DV WINDOW HTR CONT	15-215	1H182	C10
RH DV WINDOW HTR CONT	15-216	2H182	C14

(2) Gain access to the appropriate switch by lowering the rear switch panel on its hinges, or by releasing the quick-release fasteners and withdrawing the forward switch panel from its mounting, as applicable.

C. Remove Toggle Switch or Push-switch

(1) On a switch with screw-type terminals, roll back the rubber terminal cover and disconnect the electrical cables from the switch. On a switch with socket-type terminals, using a suitable tool,

withdraw the pin inserts.

(2) Where necessary unscrew the push-switch knob. Using a tubular spanner, remove the nut and washer from the front of the panel and withdraw the switch and tab washer from the rear.

D. Install Toggle Switch or Push-switch

(1) Comply with the electrical safety precautions.

(2) Position the tab washer on the switch and insert the switch through the aperture from the rear of the panel, ensuring that the tab on the tab washer engages the locating hole in the panel.

(3) Secure the switch with the nut and washer. Where necessary, refit the push-switch knob.

(4) Connect the electrical cables to the switch, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram. Position the rubber terminal cover over the screw-type terminals.

E. Remove Rotary Switch

R (1) CENTRE CONSOLE FLOOD light dimmer/off switch only:

R (a) Remove the bolts securing the terminal block
R and one section of the heat shield to the
R cable former.

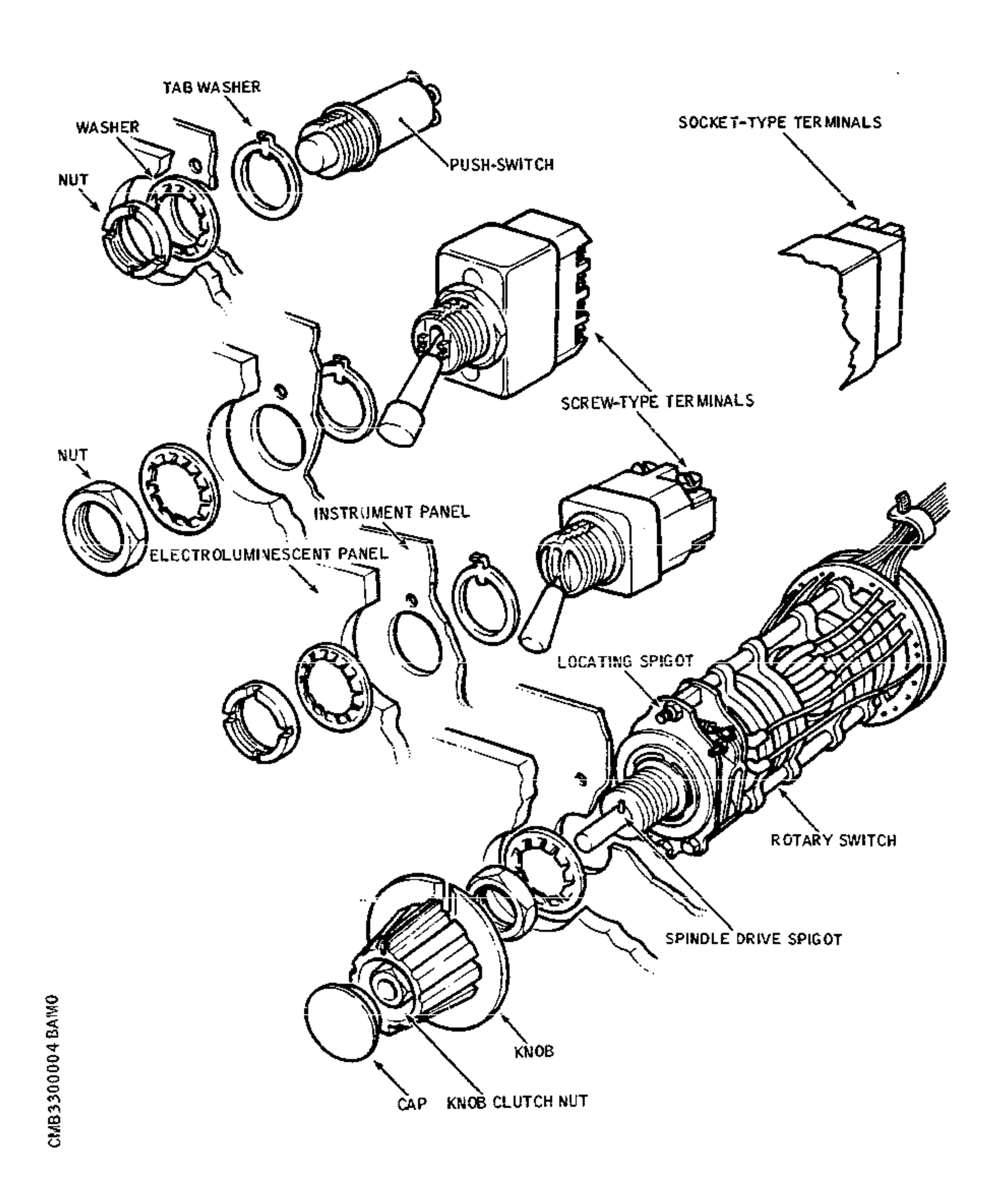
R (b) Ease the terminal block clear of the switch
R and withdraw the section of the heat shield
R from the switch body.

R (c) Remove the bolt securing the second section
R of the heat shield to the diode board and
R withdraw the section of the heat shield from
R the switch body.

R (2) Release the flying leads from the loom ties and, using a suitable tool, withdraw the pin inserts from the module block.

R (3) Remove the cap from the end of the switch knob, loosen the clutch nut and withdraw the knob from the switch spindle.

R (4) Using a tubular spanner, remove the nut and washer



Switches - Installation
Figure 402

from the front of the panel and withdraw the switch from the rear.

F. Install Rotary Switch

(1) Comply with the electrical safety precautions.

(2) Insert the switch through the aperture from the rear of the panel, ensuring that the locating spigot engages the locating hole in the panel.

(3) Secure the switch with the nut and washer.

(4) Fit the knob on the switch spindle, ensuring that the spindle spigot is engaged with the slot in the knob. Tighten the clutch nut and fit the end cap.

(5) Using a suitable tool, connect the flying leads to the module block, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

R (6) CENTRE CONSOLE FLOOD light dimmer/off switch only:

R (a) Position both sections of the heat shield
R around the body of the switch.

R (b) Secure one section of the heat shield to the
R diode board with the attachment bolt.

R (c) Ease the terminal block into position on the
R cable former and secure the terminal block
R and the second section of the heat shield to
R the cable former with the attachment bolts.

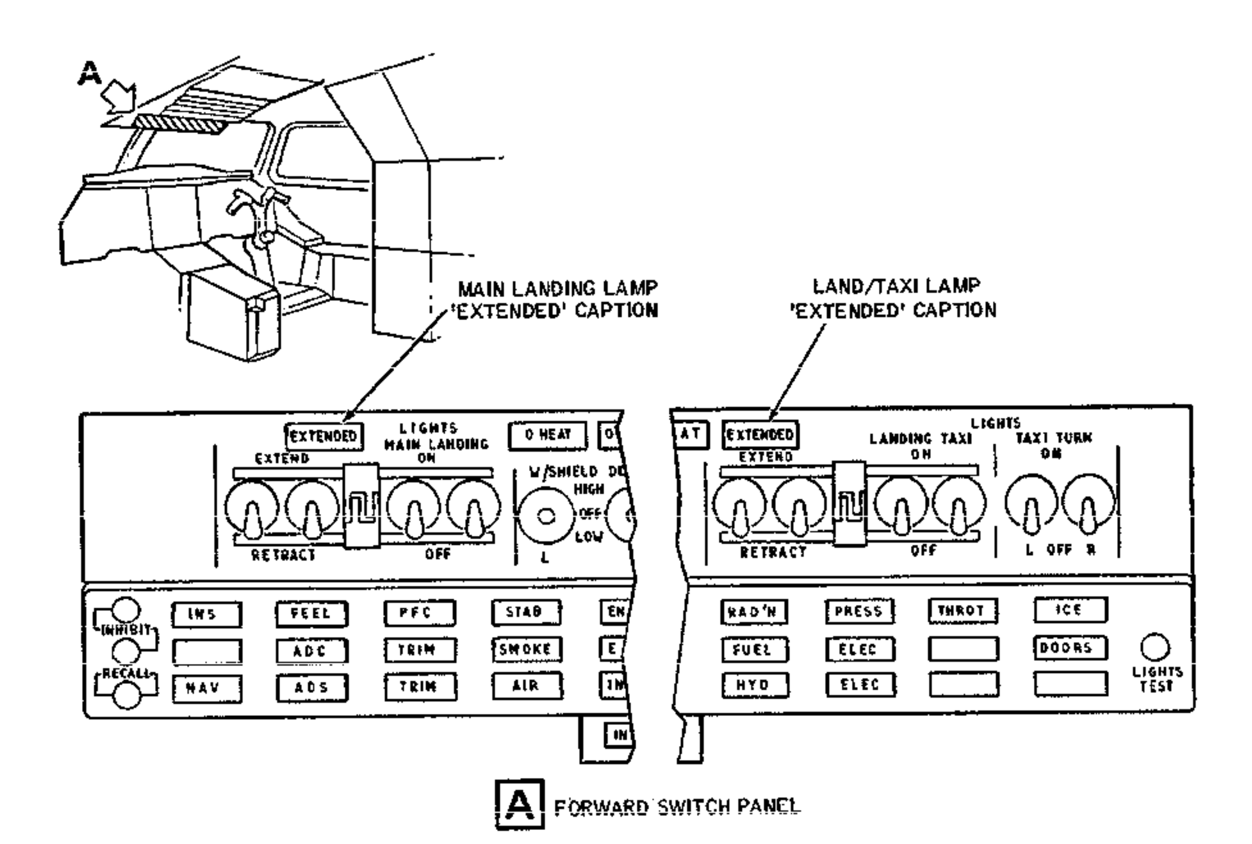
R (7) Secure the flying leads to the cable loom with suitable ties in accordance with 20-27-15.

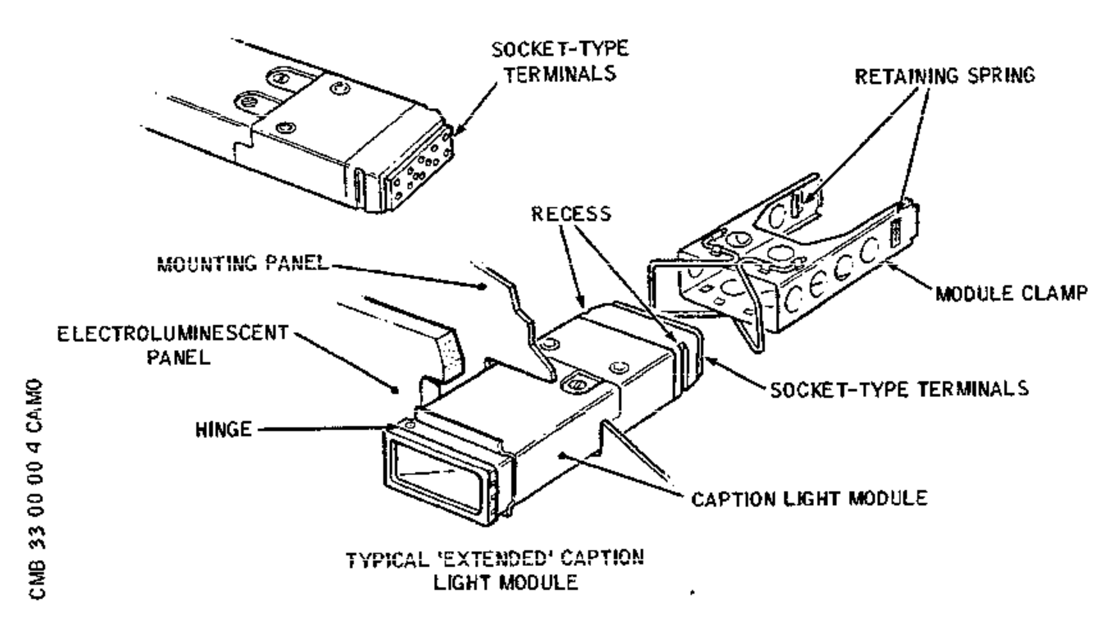
G. Remove Caption Light Module

(1) If necessary, release the cable loom ties to gain access to the pin inserts at the rear of the EXTENDED caption module.

(2) Using a suitable tool, withdraw the pin inserts from the module.

(3) Disengage the clamp retaining springs at the rear of the module, and withdraw the module from the front of the panel and the clamp from the rear.





Caption Light Module - Installation
Figure 403

H. Install Caption Light Module

(1) Comply with the electrical safety precautions.

(2) Position the clamp on the rear of the panel and insert the caption light module through the aperture from the front, ensuring that the hinged edge of the module is in alignment with the white-painted line on the back of the panel, and that the clamp is aligned symmetrically with the module.

(3) Hold the module firmly against the front of the panel and press the clamp into position from the rear until the retaining springs engage the recess in the module body.

(4) Using a suitable tool, connect the pin inserts to the module, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(5) Refit the cable loom ties, as necessary, in accordance with 20-27-15.

J. Conclusion

(1) Close and secure the panel or refit the panel to its mounting and secure it with the quick-release fasteners, as applicable.

(2) Remove the safety clips and reset the circuit breakers tripped in operation B.(1), if applicable, and check the operation of the switch(es) or caption light module(s) by carrying out the appropriate test procedure.

Printed in England

FLIGHT COMPARTMENT - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains general instructions for the removal and installation of typical minor electrical components fitted to panels in the flight compartment that are common to sub-systems within this section.

These panels are as listed in Table 1.

DESCRIPTION	PANEL NO.
LH switch panel	12-211
RH switch panel	5-212
LH side console switch panel	1-211-2
RH side console switch panel	1-212-2
Essential d.c. circuit breaker panel (hinged)	3-213
3CM lighting control panel	11-214
3CM brake panel	12-214
3CM lower electrical panel (hinged)	6-214
R Oxygen panel	20-215

Panels
Table 1

Access to the components is gained by removing the appropriate section of the panel or, where applicable, lowering the panel on its hinges.

Any component can be removed or installed without first removing the associated electroluminescent panelling.

2. Panel-mounted Components (Ref. Fig. 401)

CAUTION: ELECTROLUMINESCENT (EL) PANELS ARE VULNERABLE TO DAMAGE BY SCRATCHING AND CRACKING. ENSURE THAT TOOLS DO NOT DAMAGE THE POLISHED WALL OF THE PANEL.

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare to Remove Panel-mounted Components

(1) For the 3CM lower electrical panel and the essential d.c. circuit breaker panel, isolate the electrical generation and external power supplies as detailed in 24-00-00, Servicing. For all other panels, trip the circuit breakers associated with the appropriate panel as listed below and fit safety clips

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH switch panel			
LH DASH & CTR FLOODS SUP	1-213	L234	M22
STBY MAG COMPASS LT SUP	1-213	L380	P22
LH DASH INST LTS SUP	13-215	L372	A12
DASH & G/SHIELD PNL LTG SUP	13-215	L85	A11
PLT'S LT TEST SUP	15-215	L1001	E14
CHART STOWAGE LTS SUP	15-216	L237	D12
RH switch panel			
RH DASH FLOOD SUP	5-213	L235	A19
RH DASH INST LTS SUP	13-216	L371	E9
DASH & G/SHIELD PNL LTG SUP	13-215	L85	A11

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
PLT'S LT TEST SUP	15-215	L1001	E14
CHART STOWAGE LTS SUP	15-216	L237	D12
LH side console switch panel			
LH DIGITAL DISPLAY DIMMING SUP	15-216	L1211	G14
LH CONSOLE PNL LTG SUP	14-215	L83	F10
LH CONSOLE INST LTS SUP	14-215	L374	B11
RH side console switch panel			
RH DIGITAL DISPLAY DIMMING SUP	15-216	L1216	A13
RH CONSOLE PNL LTG SUP	13-216	L84	D8
RH CONSOLE INST LTS SUP	14-216	L373	E8
Essential d.c. circuit breaker panel			
LH CONSOLE INST LTS SUP	14-215	L374	B11
1st SUPERN'Y SPOT SUP	15-215	L240	B13
ROOF & CB PNL 3-213 LTS SUP	13-216	L81	A8
3CM lighting control panel			
3CM FLOOD & READING LTS SUP	1-213	L238	N22
R R FUEL CONSUMED TOTAL/WT IND	13-216	E473	D5
3CM STN CB PNL LTS SUP	2-213	L87	A9

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	3CM STN CTR INST LTS SUP	13-215	L378	C11
	3CM STN RH INST LTS SUP	14-215	L376	F11
	3CM STN LH INST LTS SUP	13-216	L377	E8
	3CM STN PNL LTS SUP	14-216	L86	D9
	Brake panel			
R R	RH INBD BRAKE FAN SUP & CONT	13-215	2G351	B1
R R	LH OUTER BRAKE FAN SUP & CONT	14-215	1G352	C2
R R	WHEEL BRAKE A SYS CONT O/LOAD IND	15-215	G131	B7
R	BRAKE ACCUM PRESS IND	13-216	G111	A12
R R	LH INBD BRAKE FAN SUP & CONT	13-216	1G351	E21
R	3CM LH INST LTS SUP	13-216	L377	E8
R R	RH OUTER BRAKE FAN SUP & CONT	14-216	2G352	F20
R	3CM STN PNL LTS SUP	14-216	L86	D9
R	WHEEL BRAKE B SYS CONT	15-216	G132	B18
R	3CM STN LH LT TEST SUP 1	15-216	L1003	C12
R	3CM STN LH LT TEST SUP 2	15-216	L1004	C13
R R	2ND PLT 3CM CLOCK TIMEBASE - BAT SUP	16-216	F56	-
R R	BRAKE EMER/ACCUM PRESS IND	25-216	G118	C6
R	AIDS SUP	2-213	R262	G19
R	Oxygen panel			

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	NO.1 INPH SUP	1-213	R89	K19
R	NO.2 INPH SUP	3-213	R90	H2
R	TOILET ENGAGED SIGN SUP	5-213	M201	C19
R R	FLIGHT DECK ROOF LTS SUP	14-215	L232	C11
R R	RACKING AREA INSPECTION LTS SUP	15-215	L239	B14
R R	ROOF & CB PNL 3-213 LTS SUP	13-216	L81	A8
R	GRND POWER LTS SUP	25-216	X369	B5

(2) Release the quick-release panel fasteners and withdraw the panel sufficiently to gain access to the component, or, where applicable, lower the panel on its hinges.

C. Remove Typical Toggle Switch or Push-switch

(1) On a switch with screw-type terminals, roll back the rubber terminal cover and disconnect the electrical cables from the switch.

(2) On a switch with socket-type terminals, using a suitable tool, withdraw the pin inserts.

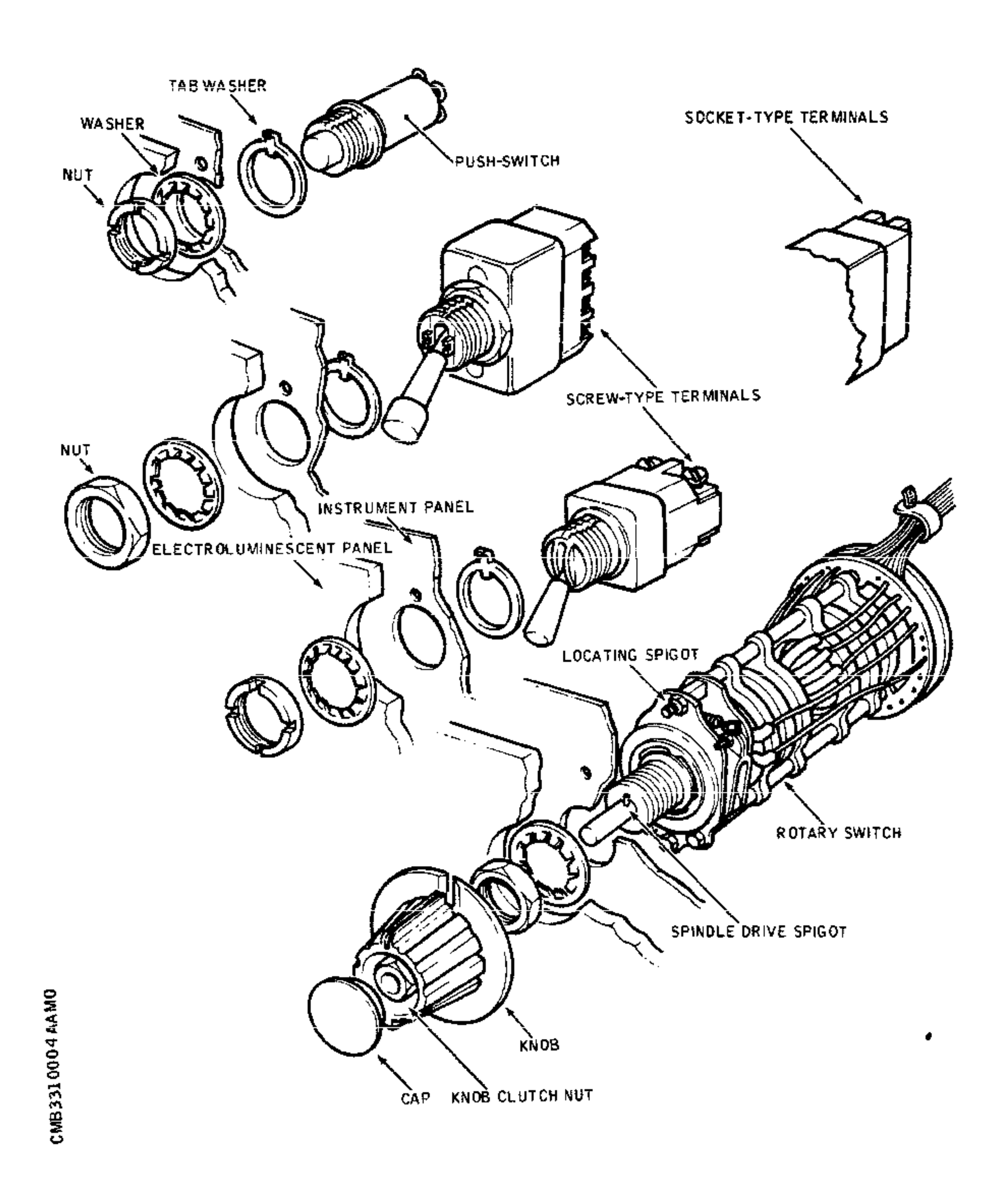
(3) If applicable, remove the knob.

(4) Using a tubular spanner, remove the nut and washer from the front of the panel and withdraw the switch and tabwasher from the rear.

D. Install Typical Toggle Switch or Push-switch

(1) Comply with the electrical safety precautions.

(2) Position the tabwasher on the switch and insert the switch through the aperture from the rear of the panel, ensuring that the tab on the tabwasher



Typical Component Installation
Figure 401

engages the locating hole in the panel.

(3) Secure the switch with the nut and washer.

(4) If applicable, refit the knob.

(5) Connect the electrical cables to the switch, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram. Position the rubber terminal cover over the screw-type terminals.

E. Remove Typical Rotary Switch

(1) Release the flying leads from the loom ties and, using a suitable tool, withdraw the pin inserts from the module block.

(2) Remove the cap from the end of the switch knob, loosen the clutch nut and withdraw the knob from the switch spindle.

(3) Using a tubular spanner, remove the nut and washer from the front of the panel and withdraw the switch
R from the rear. Disengage the bonding washer and
R lead from the switch boss (LH or RH DASH INSTRUMENTS
R switches only, on LH or RH switch panels).

F. Install Typical Rotary Switch

(1) Comply with the electrical safety precautions.

R (2) Position the bonding washer over the switch boss
R (LH or RH DASH INSTRUMENTS switches only) and
R insert the switch through the aperture from the rear of the panel, ensuring that the locating spigot engages the locating hole in the panel.

(3) Secure the switch with the nut and washer.

(4) Fit the knob on the switch spindle, ensuring that the spindle drive spigot is engaged with the slot in the knob. Tighten the clutch nut and fit the end cap.

(5) Using a suitable tool, connect the flying leads to the module block, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(6) Secure the flying leads to the cable loom with suitable ties in accordance with 20-27-15.

G. Conclusion

(1) Close/refit and secure the panel.

R (2) Check that the panel is bonded in accordance with 20-27-11.

R (3) For the 3CM lower electrical panel and the essential d.c. circuit breaker panel, cancel the electrical safety precautions taken in operation B.(1), i.e., remove the warning notices.

R (4) For all other panels, remove the safety clips and reset the circuit breakers tripped in operation B.(1).

R (5) Check the operation of the switch by carrying out the appropriate test procedures.

MAIN LIGHTING - DESCRIPTION AND OPERATION

1. General

Illumination of local areas of the flight compartment which
serve the requirements of individual crew members is
R provided by floodlights, storm floodlights, spotlights,
chart lights, stowage lights, racking inspection lights and
a reading light.

General illumination of the flight compartment is provided by two fluorescent lamp assemblies mounted in the roof. Location of the associated control switches enables each crew member to control the lights serving his own station.

2. Dashboard Panel Floodlights (Ref. Fig. 001)

R Banks of filaments fitted in lamp assemblies are used
to floodlight the dashboard panels. The assemblies are
secured to the underside of the pilots' LH, centre and RH
R glareshields. Each lamp assembly is fitted with a cover
R secured by quick-release fasteners to facilitate access
R to the filaments.

3. Centre Console Floodlight (Ref. Fig. 001)

R Floodlighting for the centre console is provided by a
R filament lamp located in an assembly fitted on the roof
R centre line aft of the rear switch panel 4-211. The
R reflector assembly can be moved in one plane by turning
an associated adjusting screw.

4. Floor Floodlights (Ref. Fig. 001)

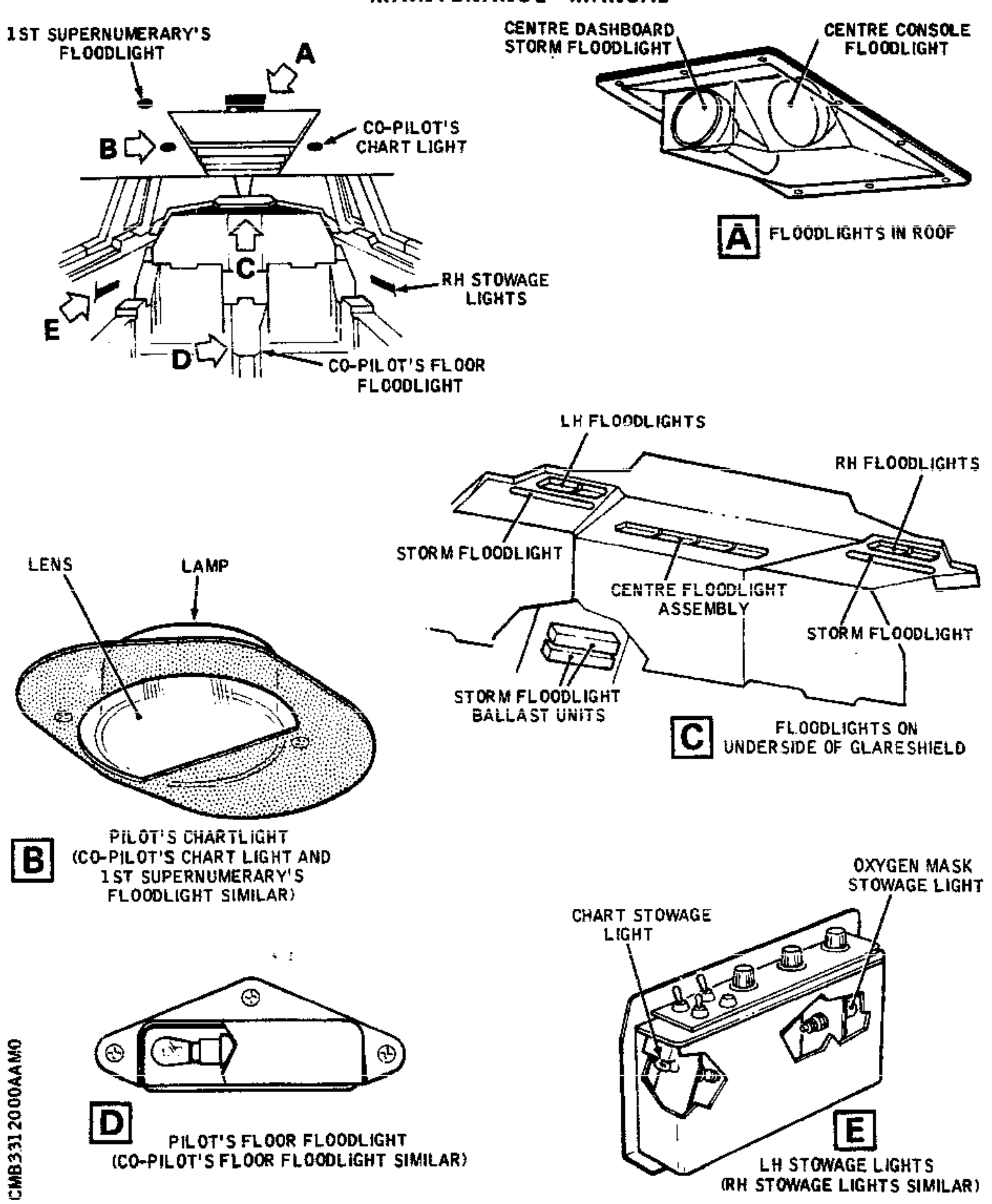
Floodlighting of the floor at the pilot's and co-pilot's positions is provided by two lamp assemblies, one fitted on the LH side and one fitted on the RH side of the centre console.

5. Storm Floodlights (Ref. Fig. 001)

Additional floodlighting for the LH and RH dashboard panels
is provided by a fluorescent storm floodlight mounted under
each side glareshield. The two associated ballast units are
fitted behind the centre dashboard panel. Additional
floodlighting for the centre dashboard is obtained from a
R filament storm floodlight fitted in the assembly that
accommodates the centre console floodlight.

6. First Supernumerary's Floodlight (Ref. Fig. 001)

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- Main Lighting (Forward) - Equipment
Figure 001

R A floodlight for the first supernumerary's station is fitted in the flight compartment roof to the left of the assembly that accommodates the centre console floodlight and centre dashboard storm floodlight. The
R floodlight is adjusted to project the light through a translucent screen on to the required area.

7. Chart Lights (Ref. Fig. 001)

A chart lamp assembly is fitted in the roof above each pilot's position. These lamp assemblies are the same type as that used for the 1st supernumerary's floodlight.

8. Chart Stowage Lights (Ref. Fig. 001)

R A filament lamp is fitted in the aft structure of the LH and RH switch panels 12-211 and 5-212 respectively. An associated reflector assembly for each lamp directs the light on to the respective chart stowage area.

9. Oxygen Mask Stowage Lights (Ref. Fig. 001)

R A lamp assembly is fitted in the forward structure of the LH and RH switch panels 12-211 and 5-212 respectively. Each filament is enclosed in a handed cover which is a push fit on the assembly body. The cover incorporates a translucent window positioned so that the light is directed onto the oxygen mask stowage area.

10. 3CM Panel Floodlights (Ref. Fig. 002)

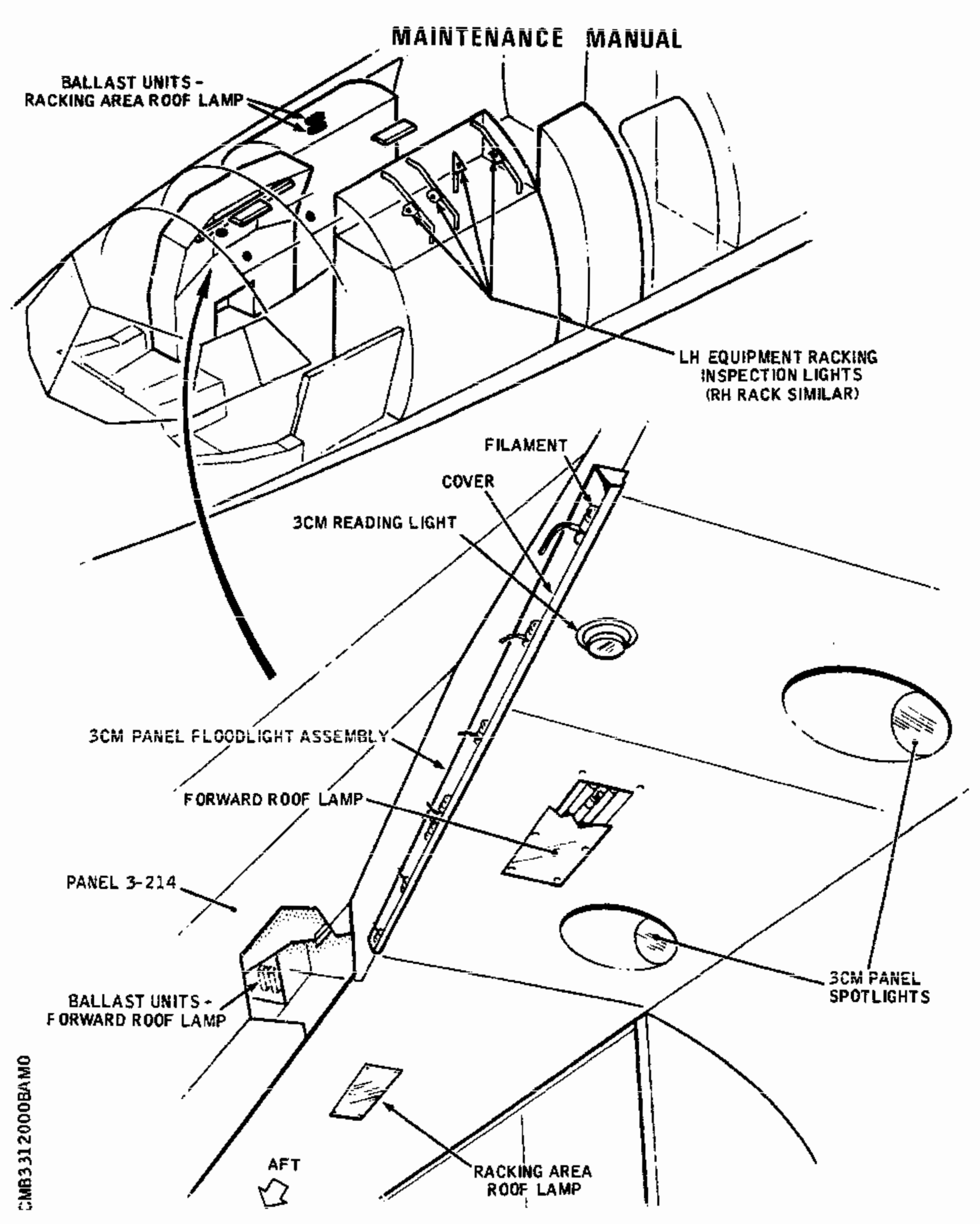
A bank of filaments fitted in lamp assemblies is used to floodlight the third crew member's (3CM) panels. The assemblies are mounted along the top edge of the panel structure in a reflector, fitted with a metal cover, which directs the light downward.

11. 3CM Panel Spotlights (Ref. Fig. 002)

Additional illumination at the 3CM station is provided by
R two spotlights, located in the roof to the left of the
R centre line and aligned to project the light on to the 3CM station. These spotlights are the same type as that used for centre console illumination.

12. Equipment Rack Inspection Lights (Ref. Fig. 002)

R Four filament lamps are used to illuminate the area behind the circuit breaker panels in the LH and RH rack upper structure. The four lamps in each rack are fitted, one on each of four disconnect mountings (plug breaks), on the rack



- Main Lighting (Rear) - Equipment
Figure 002

structure behind the associated circuit breaker panels. Each lamp is fitted with a push-on cover containing a clear lens and retained on a lampholder by leaf springs with locating pips that engage in a groove on the cover. The light can be directed by swivelling the cover on the body of the lamp.

13. 3CM Reading Light (Ref. Fig. 002)

R A reading light is provided for the 3CM and is located to the left of the roof centre line, laterally opposite the 3CM forward floodlight. This unit incorporates a filament lamp and a ball-and-socket mounting principle which allows a 30 deg movement of the filament assembly in any direction from the centre line of the unit.

14. Roof Lamps (Ref. Fig. 002)

R Two roof lamp assemblies are fitted on the centre line of the flight compartment roof, one forward over the 3CM station and one aft over the racking area. Each assembly comprises two fluorescent tubes, for normal lighting, and three filament lamps which are associated with emergency lighting (Ref. 33-51-00). The assembly is housed in a reflector box which is located above a diffusion panel fitted flush with the roof furnishing. The two ballast units for the forward roof lamp are fitted in the secondary structure of the 3CM station behind panel 3-214 and the two ballast units for the racking area roof lamp are fitted in the RH rack upper structure.

15. Operation (Ref. Fig.003 and 004)

A. Controls

All flight compartment main lighting control, except for the oxygen mask stowage lights, is effected through direct switching arrangements. Each switch controls the associated lamp or lamps listed in Table 1.

The chart stowage lights, racking inspection lights, racking area roof light and forward roof light are all controlled by ON/OFF toggle switches. The storm floodlights are controlled by a three-position rotary switch engraved OFF - LH/RH DASH - ALL. The LH and RH chart lights are each controlled by a push "on"/push "off" switch and a separate dimmer. The remaining lights are controlled by rotary dimmer/OFF switches. The oxygen mask stowage floodlights are controlled by the LH and RH SIDE CONSOLE instrument lighting switches

(Ref. 33-17-00).

B. Functional Description (Ref. Table 1)

The function of all switches except the storm floodlight and the chart light switches is self-evident. With the storm floodlight switch set at LH/RH DASH, the fluorescent lamps which illuminate the LH and RH dashboard only are lit. With the switch set at ALL, the roof mounted floodlamp, which illuminates the centre dashboard, and the fluorescent lamps, which illuminate the LH and RH dashboard, are all lit.

When the LH or RH CHART LIGHT push-switch is pressed the associated chart lamp is lit; light intensity is controlled by a separate CHART LIGHT dimmer. When the push-switch is again pressed the associated light goes out.

SWITCH ENGRAVING	SWITCH LOCATION	LAMP(S) CONTROLLED
LH AND CENTRE DASH FLOOD	LH switch panel 12-211	LH and centre dashboard floodlights
RH DASH FLOOD	RH switch panel 5-212	RH dashboard floodlights
FLOODS	3CM lighting control panel 11-214	3CM floodlights and roof spotlights
CENTRE CONSOLE FLOOD	Roof panel 4-211	Centre console floodlight
FLOOD	Circuit breaker panel 3-213	1st supernumerary's floodlight
STORM	Roof panel 4-211	LH, RH and centre dashboard storm floodlights
CHART LIGHT	LH switch panel 12-211	Pilot's LH chart lamp
CHART LIGHT	RH switch panel	Pilot's RH chart

SWITCH ENGRAVING	SWITCH LOCATION	LAMP(S) CONTROLLED
	5-212	lamp
STOWAGE FLOOD	LH switch panel 12-211	LH chart stowage and floor floodlights
STOWAGE FLOOD	RH switch panel 5-212	RH chart stowage and floor floodlights
RACKING AREA LTS. - INSP	Oxygen panel 20-215	Racking inspection lights
SPOT	3CM lighting control panel 11-214	3CM reading light
ROOF	Roof panel 4-211	Forward roof lamp
RACKING AREA LTS. - ROOF	Oxygen panel 20-215	Racking area roof lamp
FWD. RACKING	Forward steward's panel 1-221	Racking area roof lamp

Main Lighting Controls
Table 1

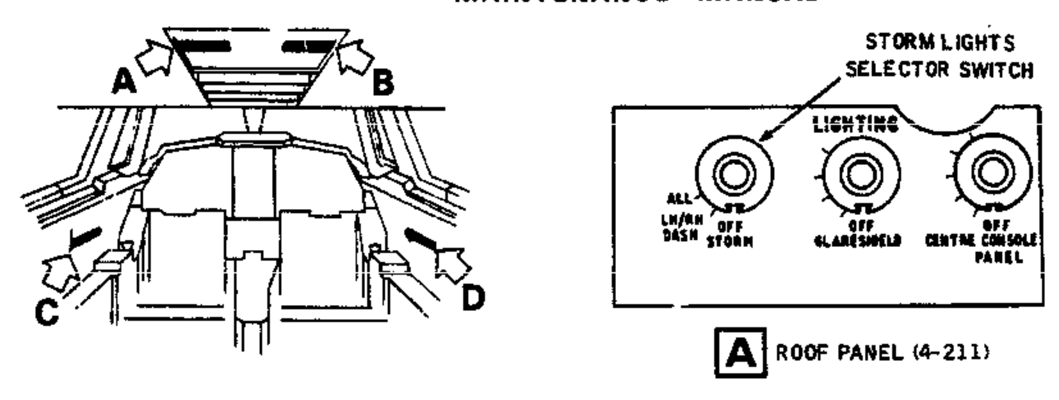
C. Electrical Supplies

Electrical supplies are listed in Table 2.

SERVICE	BUSBAR	CIRCUIT BREAKER PANEL
LH and centre dashboard floodlights	'A' essential 28 V d.c.	1-213
RH dashboard floodlights	'B' essential 28 V d.c.	5-213
3CM floodlights,	'A' essential	1-213

SERVICE	BUSBAR	CIRCUIT BREAKER PANEL
roof spotlights and reading light	28 V d.c.	
Centre console floodlight	'B' essential 28 V d.c.	5-213
1st supernumerary's floodlight	'A' main 28 V d.c.	15-215
LH and RH dashboard storm floodlights	No.4 Main 115 V a.c.	14-216
Centre dashboard storm floodlight	'A' main 28 V d.c.	15-215
Pilot's and co-pilot's chart lamps; LH and RH chart stowage lamps; LH and RH floor floodlights	'B' main 28 V d.c.	15-216
Racking inspection lights	'A' main 28 V d.c.	15-215
Forward and racking area roof lamps	No.1 ground/ flight 115 V d.c.	14-215

Electrical Supplies
Table 2



A ROOF PANEL (4-211)

CENTRE CONSOLE FLOOD DIMMER/OFF SWITCH

LIGHTING

OFF CENTRE DASH

OFF CENTRE CONSOLE FLOOD

OFF ROOF

B ROOF PANEL (4-211)

OFF
LH DASH INSTRUMENTS

OFF
LH AND CENTRE DASH FLOOD

LH AND CENTRE DASH FLOOD DIMMER/OFF SWITCH

DIM
CHART LIGHT

PILOT'S CHART LIGHT DIMMER SWITCH

BRIGHT
DIM
OFF
COMPASS
CHART LIGHT

PILOT'S CHART LIGHT ON/OFF PUSH-SWITCH

ON
OFF
STOWAGE FLOOD
LO
HI
TEST
D/B LIGHT

PILOT'S CHART STOWAGE FLOOD SWITCH

C LH SWITCH PANEL (12-211)

OFF
RH DASH INSTRUMENTS

OFF
RH DASH FLOOD

RH DASH FLOOD DIMMER/OFF SWITCH

DIM
CHART LIGHT

CO-PILOT'S CHART LIGHT DIMMER SWITCH

CO-PILOT'S CHART LIGHT ON/OFF PUSH-SWITCH

CHART LIGHT

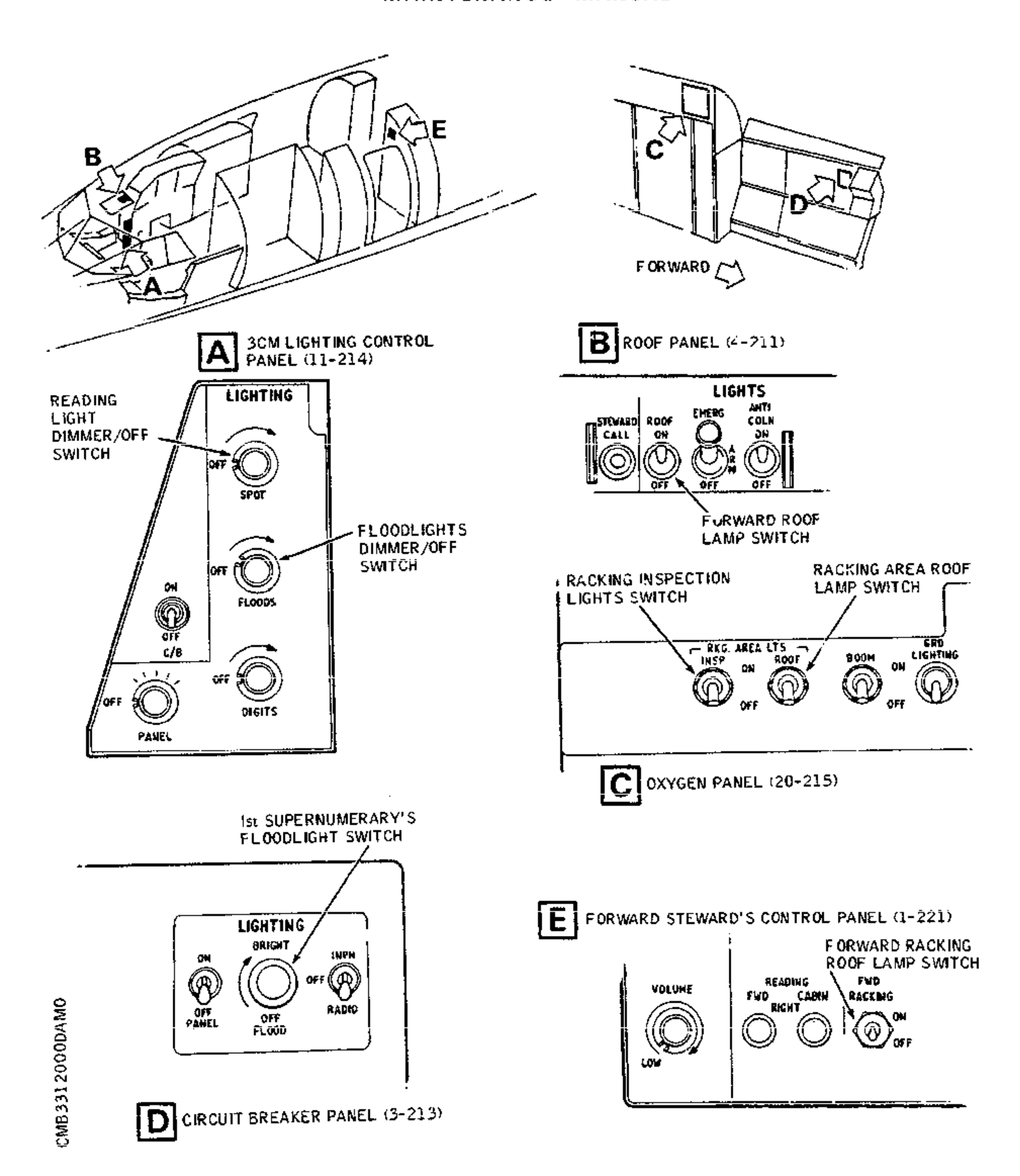
LO
HI
TEST
D/B LIGHT
ON
OFF
STOWAGE FLOOD

CO-PILOT'S CHART STOWAGE FLOOD SWITCH

D RH SWITCH PANEL (5-212)

CMB3312000CAN0

\- Main Lighting (Forward) - Controls
Figure 003



Main Lighting (Rear) - Controls
Figure 004

R

MAIN LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para. 3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

Where lighting circuits are similar, procedures and charts are provided which are applicable to either circuit. If two components are involved, i.e., one in each circuit, both references to the associated components listed in Table 101 are given, e.g., 'Renew Switch (14) or (15)'.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

C. Before trouble shooting, renew any faulty flourescent tube or filament lamp.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para.2.). Switch on at the forward ROOF light switch on the Pilot's roof panel and at the racking area ROOF light switch on the flight compartment oxygen panel. Check that both tubes in each of the associated lamps are lit. IF -

OK

NOT OK —
1. One fluorescent tube in either roof lamp fails to light - renew faulty Ballast Unit (28) or (29) or check wiring as necessary.
2. Both roof lamps fail to light - renew CB (1) or check wiring as necessary.
3. Forward roof lamp fails to light - Chart 101.
4. Racking area roof lamp fails to light - Chart 102.

B. Slowly rotate the LH/CENTRE and RH DASH FLOOD dimmer switches in turn, and check that the associated floodlamps light and that each light becomes progressively brighter. IF -

OK

NOT OK —
1. Associated floodlamps fail to light - Chart 103.
2. Dimmer switches fail to vary the brilliance of the associated lights - renew Switch (14) or (15).

C. Select "LH/RH DASH" and "ALL", in turn, at the STORM control switch on the Pilots' roof panel and check that -
(1) initially, the flourescent lamps below the LH and RH glareshield light and then
(2) the centre dash floodlamp, in the roof, and the LH and RH flourescent tubes are all lit. IF -

OK

NOT OK —
1. LH or RH dash flourescent lamps fail to light - Chart 104.
2. Centre dash floodlamp fails to light - Chart 105.

OK

D. Slowly rotate the CENTRE CONSOLE FLOOD dimmer switch, on the Pilot's roof panel, and check that the associated lamp in the roof lights and that the light becomes progressively brighter. IF -

NOT OK —
1. Centre console floodlamp fails to light - Chart 106.
2. Dimmer switch fails to vary the brilliance of centre console floodlighting - renew Switch (17).

OK

E. Press the LH and RH CHART LIGHT push-switches and then rotate the associated dimmers. Check that the associated chart lamps light and that the brilliance of the light is variable. IF -

NOT OK —
1. LH and RH chart lamps fail to light - renew CB (7) or check wiring as necessary.
2. Dimmer control fails to control the brilliance of the light - renew Dimmer (19) or (21).
3. LH or RH chart lamp fails to light - Chart 107.

OK

F. Select "ON" at the LH and RH CHART STOWAGE switches and check that the appropriate stowage lamps and associated floor flood-lamps are lit. IF -

NOT OK —
1. LH and RH chart stowage and floor floodlamps fail to light - renew CB (7) or check wiring as necessary.
2. LH or RH chart stowage and floor floodlamps fail to light - Chart 108.

OK

OK

G. Slowly rotate the LH and RH SIDE CONSOLE switches and check that the associated oxygen mask stowage lamps are lit. IF -

- OK
- NOT OK - Oxygen mask stowage lamp fails to light - Ref. 33-17-00 T/S.

H. Slowly rotate the 3CM panel FLOOD lighting switch and check that the associated floodlamp, mounted on the management panels, and the spot lamps mounted in the roof are lit and that the light becomes progressively brighter. IF -

- OK
- NOT OK -
  1. Flood lighting switch fails to vary the brilliance of the associated lights - renew Switch (24).
  2. Roof spot lamps and panel mounted floodlamps not lit - rotate the 3CM reading lamp SPOT switch and check if the roof reading lamp lights. If it does not light - renew CB (8) or check wiring as necessary. If it does light - Chart 109.

I. Slowly rotate the 3CM reading lamp SPOT switch and check that the associated reading lamp lights and that the light becomes progressively brighter. IF -

- OK
- NOT OK -
  1. Rotation of switch fails to vary the brilliance of the light - renew Switch (25).
  2. 3CM reading lamp fails to light - Chart 110.

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OK

J. Slowly rotate the first supernumerary's FLOOD lighting control switch and check that the associated floodlamp lights. IF -

NOT OK -
1. First supernumerary's floodlamp fails to light - Chart 111.
2. FLOOD lighting control switch fails to vary the brilliance of the associated light - renew Switch (26).

OK

K. Switch on at the racking area INSP. lights switch and check that the filament lamps in LH and RH racks are lit. IF -

NOT OK -
1. Lamps in RH racking fail to light - locate and rectify open circuit between RH and LH racking.
2. Lamps in LH and RH racking fail to light - Chart 112.

FORWARD ROOF LAMP FAILS TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

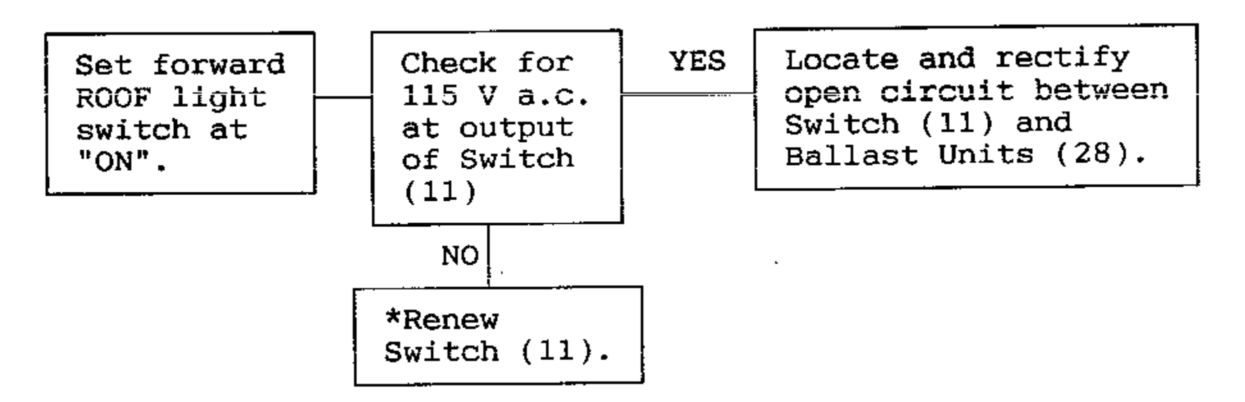


Chart 101

RACKING AREA ROOF LAMP FAILS TO LIGHT WHEN SWITCHED ON AT THE RACKING AREA ROOF LIGHT SWITCH ON THE FLIGHT COMPARTMENT OXYGEN PANEL.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

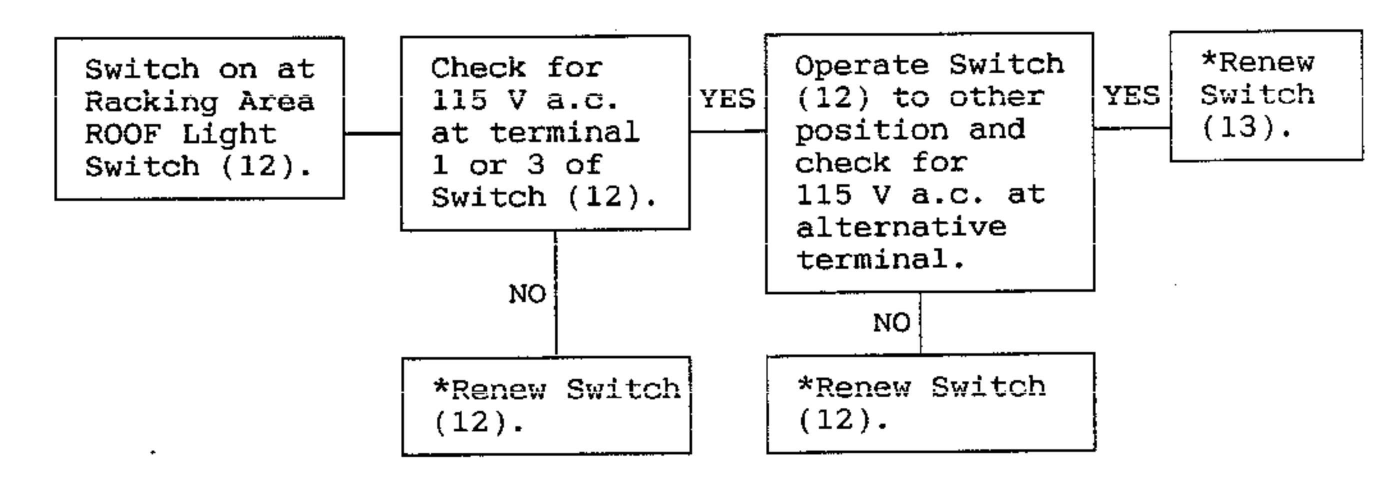


Chart 102

LH/CENTRE OR RH DASH FLOODLAMPS FAIL TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

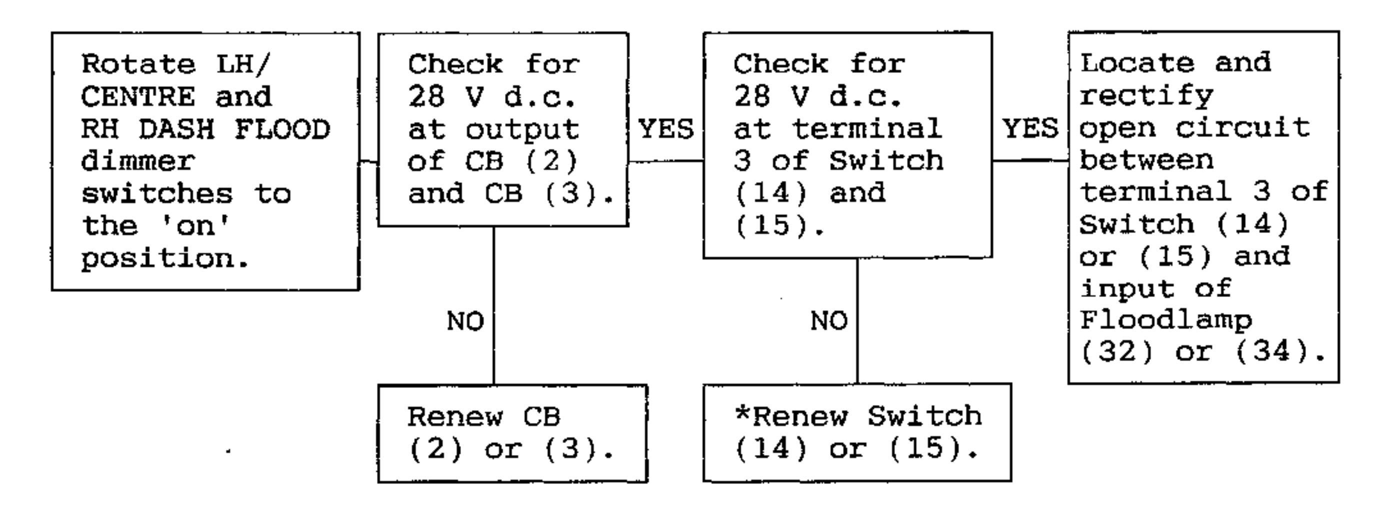


Chart 103

LH OR RH DASH FLUORESCENT LAMPS FAIL TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

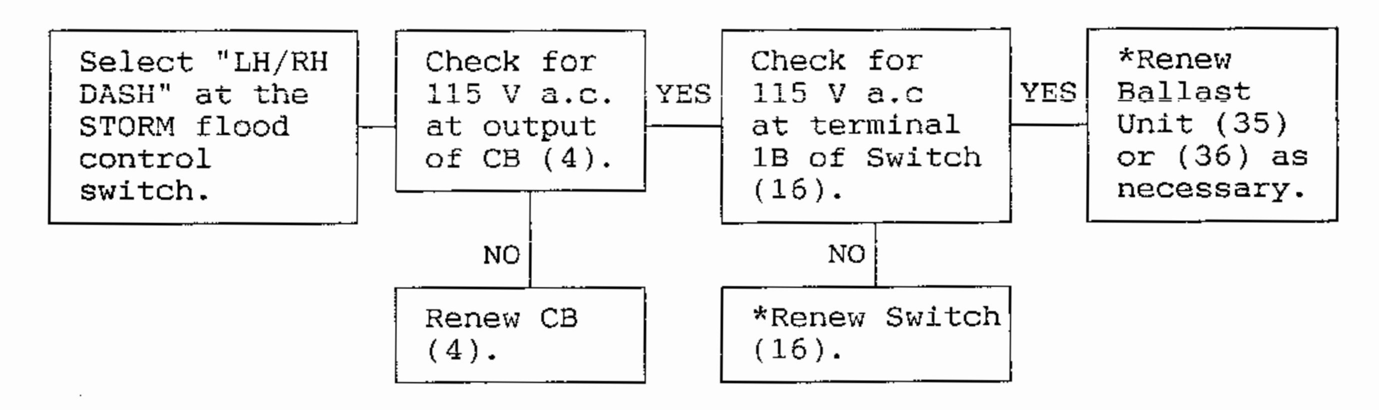


Chart 104

CENTRE DASH FLOODLAMP FAILS TO LIGHT WHEN THE 'STORM' CONTROL SWITCH IS SET TO 'ALL'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

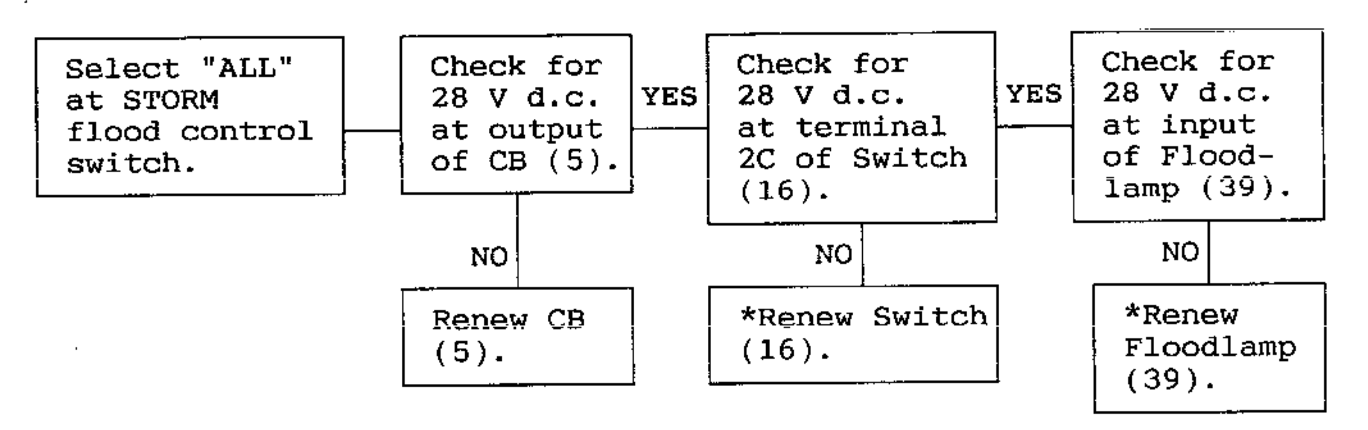


Chart 105

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CENTRE CONSOLE FLOODLAMP FAILS TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

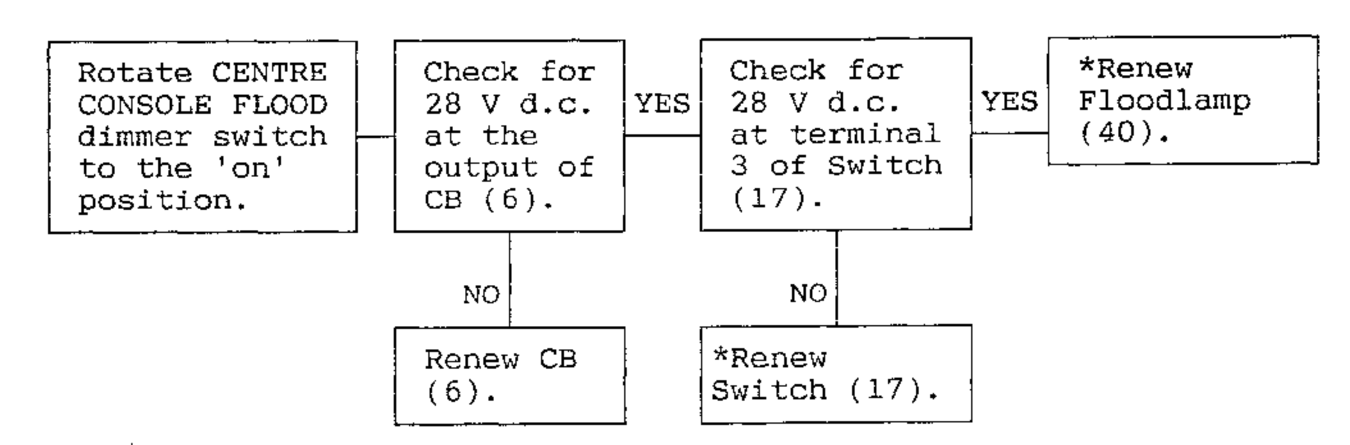


Chart 106

LH OR RH CHART LAMP FAILS TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

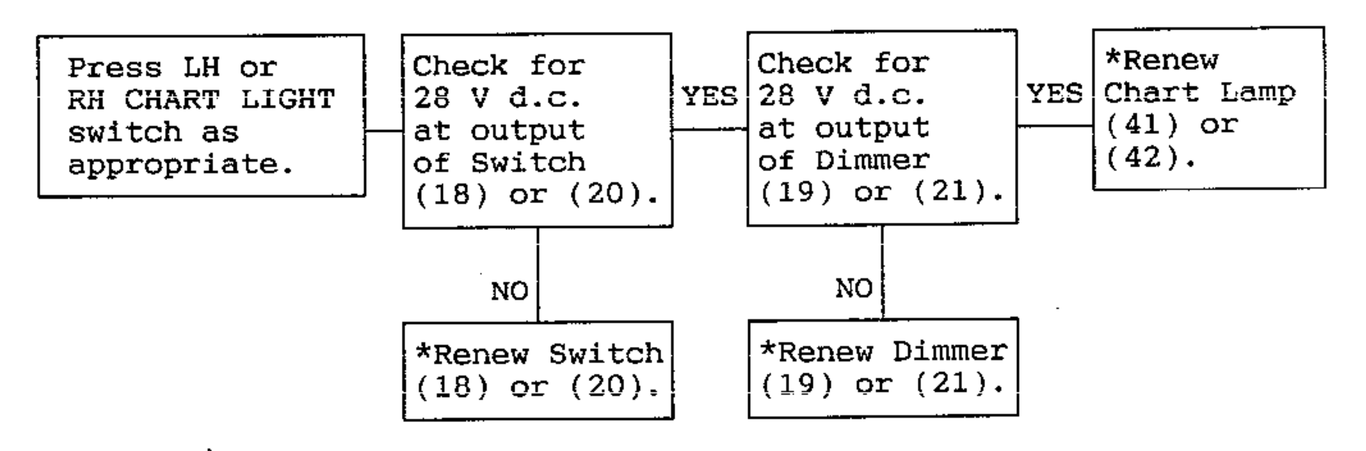


Chart 107

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LH OR RH CHART STOWAGE AND FLOOR FLOODLAMPS FAIL TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

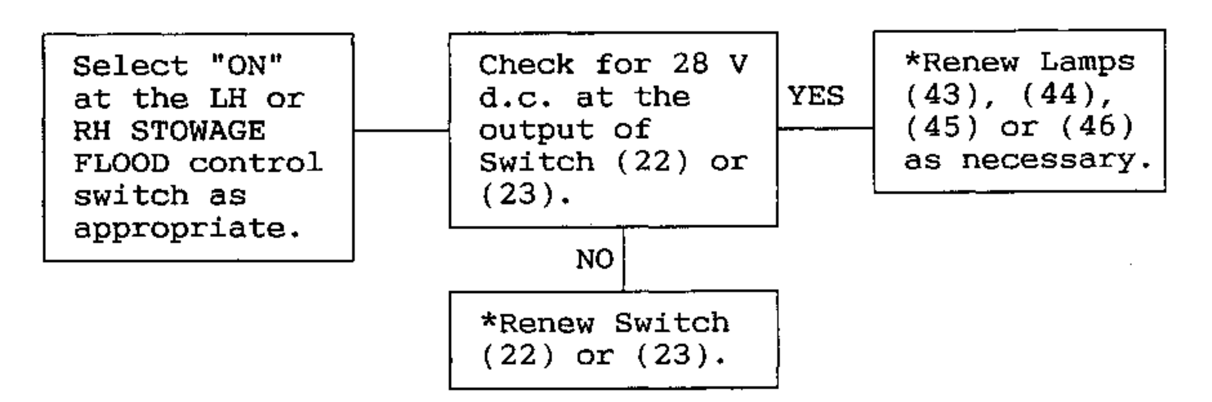


Chart 108

ROOF SPOT LAMPS AND PANEL MOUNTED FLOODLAMPS NOT LIT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

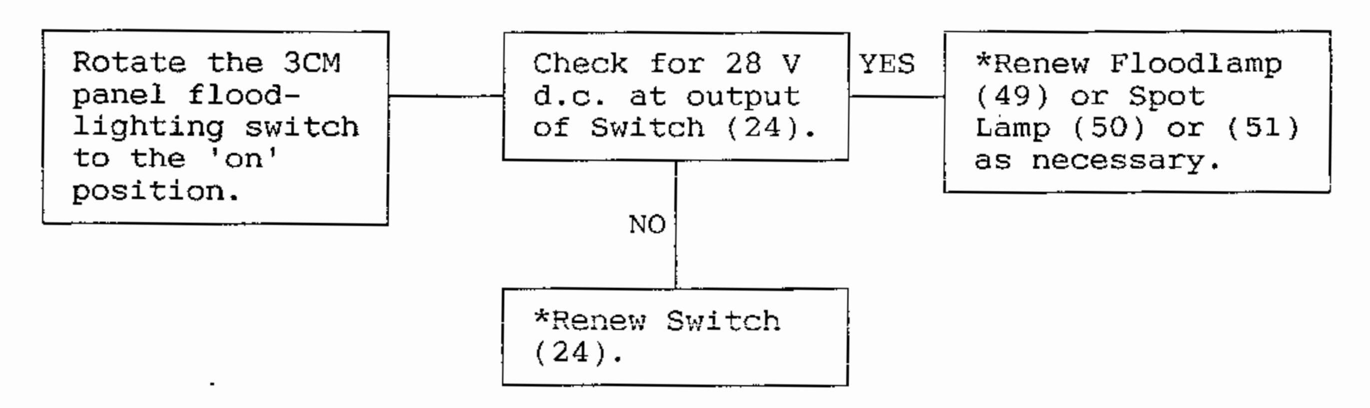


Chart 109

3CM READING LAMP FAILS TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

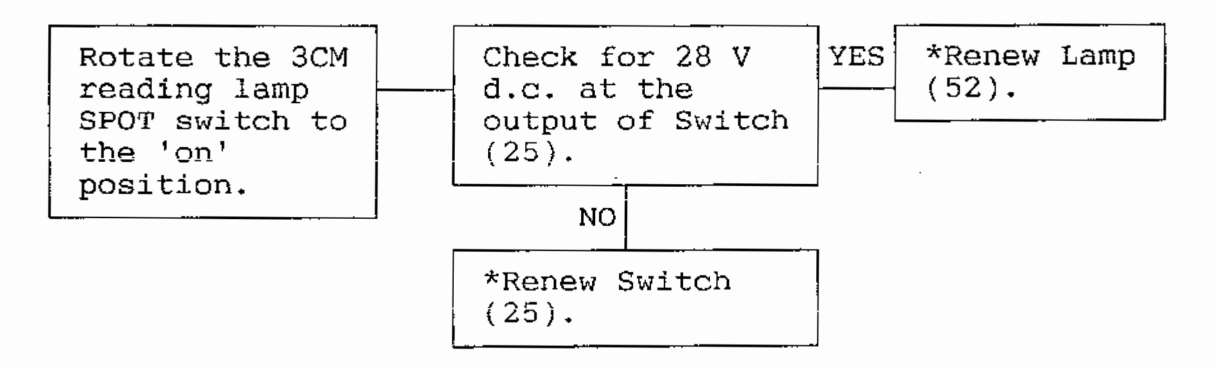


Chart 110

FIRST SUPERNUMERARY'S FLOODLAMP FAILS TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

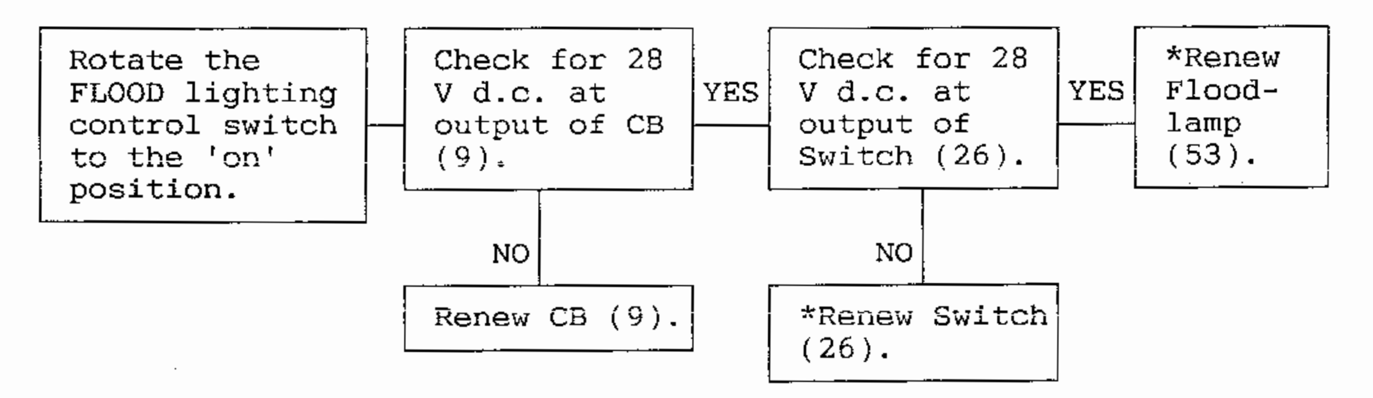


Chart 111

LAMPS IN LH AND RH RACKING FAIL TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

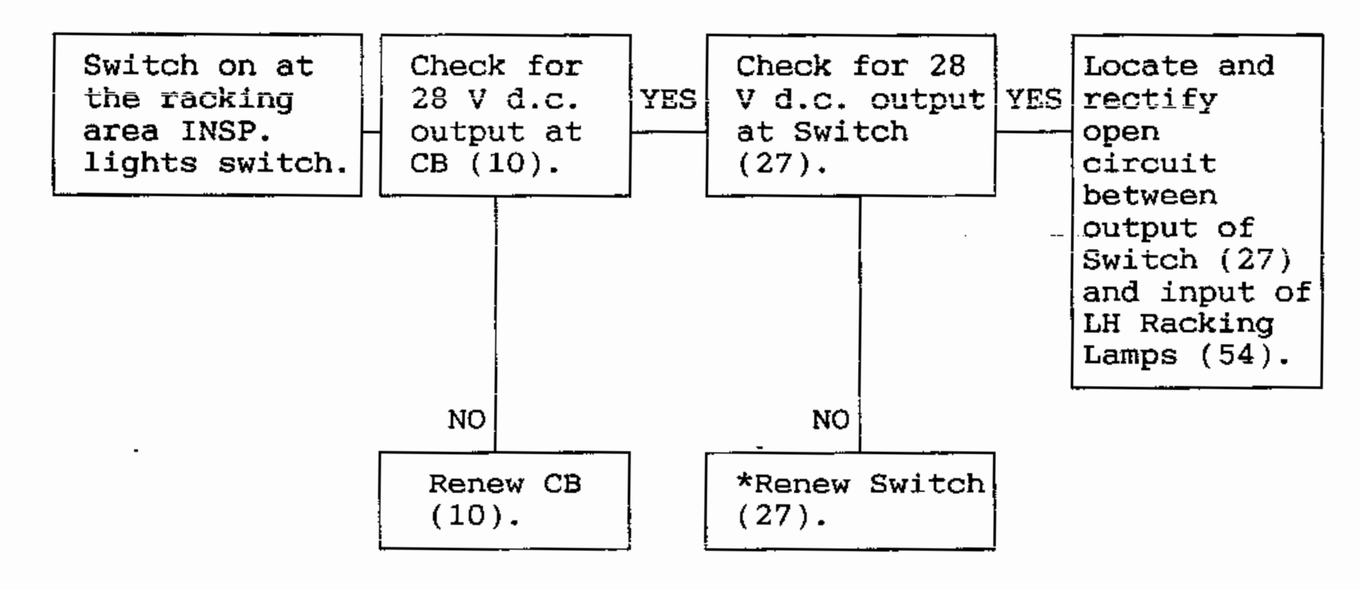


Chart 112

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
(1) Circuit breaker 115 V	-	14-215	L232	Map ref. C11	24-50-00 R/I	
(2) Circuit breaker 28 V	-	1-213	L234	Map ref. M22	24-50-00 R/I	
(3) Circuit breaker 28 V	-	5-213	L235	Map ref. A19	24-50-00 R/I	
(4) Circuit breaker 115 V	-	14-216	L231	Map ref. A8	24-50-00 R/I	
(5) Circuit breaker 28 V	-	15-215	L305	Map ref. F14	24-50-00 R/I	
(6) Circuit breaker 28 V	-	5-213	L236	Map ref. B19	24-50-00 R/I	
(7) Circuit breaker 28 V	-	15-216	L237	Map ref. D12	24-50-00 R/I	
(8) Circuit breaker 28 V	-	1-213	L238	Map ref. N22	24-50-00 R/I	
(9) Circuit breaker 28 V	-	15-215	L240	Map ref. B13	24-50-00 R/I	
(10) Circuit breaker 28 V	-	15-215	L239	Map ref. B14	24-50-00 R/I	
(11) Fwd ROOF light Switch	-	4-211	L242	Pilots' roof panel	33-12-00 R/I	
(12) Racking area ROOF light switch	-	20-215	L244	Oxygen panel 20-215	33-12-00 R/I	
(13) Racking area ROOF light switch	-	1-221	L243	Fwd steward's panel	33-12-00 R/I	
(14) .LH/CENTRE DASH FLOOD dimmer switch	-	12-211	L249	Pilots' LH switch panel	33-12-00 R/I	

					MANUAL REF.	
ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MAINT. TOPIC	WIRING DIAGRAM
(15) RH DASH FLOOD dimmer switch	-	5-212	L250	Pilots' RH switch panel	33-12-00 R/I	
(16) STORM flood control switch	-	4-211	L241	Pilots' roof panel	33-12-00 R/I	
(17) CENTRE CONSOLE FLOOD dimmer switch	-	4-211	L251	Pilots' roof panel	33-12-00 R/I	
(18) LH CHART LIGHT push-switch	-	12-211	L316	LH switch panel	33-12-00 R/I	
(19) LH CHART LIGHT dimmer	-	12-211	L252	LH switch panel	33-12-00 R/I	
(20) RH CHART LIGHT push-switch	-	5-212	L317	RH switch panel	33-12-00 R/I	
(21) RH CHART LIGHT dimmer	-	5-212	L253	RH switch panel	33-12-00 R/I	
(22) LH CHART STOWAGE switch	-	12-211	L245	LH switch panel	33-12-00 R/I	
(23) RH CHART STOWAGE switch	-	5-212	L246	RH switch panel	33-12-00 R/I	
(24) 3CM panel FLOOD lighting switch	-	11-214	L254	3CM station light control panel	33-12-00 R/I	
(25) 3CM reading lamp SPOT switch	-	11-214	L312	3CM station light control panel	33-12-00 R/I	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(26) First supernumerary's FLOOD lighting control switch.	-	3-213	L255	'B' ess. d.c. CB panel	33-12-00 R/I	
(27) Racking area INSP. lights switch	-	20-215	L248	Oxygen panel	33-12-00 R/I	
(28) Fwd roof light ballast units	- -	9-214	L260/ L261	3CM station racking structure	33-12-00 R/I	
(29) Racking area roof light ballast units	-	12-216	L262/ L263	Flt. compt. RH racking	33-12-00 R/I	
(30) Fwd roof lamp	-	214	L267	Flt. compt. roof - fwd	33-12-00 R/I	
(31) Racking area roof lamp	-	215	L268	Flt. compt. roof - aft	33-12-00 R/I	
(32) Centre dash flood-lamp	-	5-211	L308	Above centre dash	33-12-00 R/I	
(33) LH dash floodlamp	-	3-211	L306/ L307	Above LH dash	33-12-00 R/I	
(34) RH dash floodlamp	-	3-212	L309/ L310	Above RH dash	33-12-00 R/I	
(35) LH STORM floodlamp ballast unit	-	5-211	L257	Behind centre dash	33-12-00 R/I	
(36) RH STORM floodlamp ballast unit	-	5-211	L259	Behind centre dash	33-12-00 R/I	
(37) LH STORM floodlamps	-	3-211	L264	LH dash	33-12-00 R/I	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(38) RH STORM floodlamps	-	3-212	L266	RH dash	33-12-00 R/I	
(39) Centre STORM flood-lamp	-	212	L304	Flt. compt. roof	33-12-00 R/I	
(40) Centre console floodlamp	-	211	L281	Flt. compt. roof	33-12-00 R/I	
(41) Pilot's chart lamp	-	211	L282	Flt. compt. roof	33-12-00 R/I	
(42) Co-pilot's chart lamp	-	212	L283	Flt. compt. roof	33-12-00 R/I	
(43) Pilot's chart stowage lamp	-	12-211	L284	LH switch panel	33-12-00 R/I	
(44) Pilot's floor flood-lamp	-	9-211	L318	Centre console - LH side	33-12-00 R/I	
(45) Co-pilot's chart stowage lamp	-	5-212	L285	RH switch panel	33-12-00	
(46) Co-pilot's floor flood-lamp	-	9-211	L319	Centre console-RH side	33-12-00 R/I	
(47) Pilot's Oxy. mask stowage lamp	-	12-211	I315	LH switch panel	33-12-00 R/I	
(48) Co-pilot's Oxy. mask stowage lamp	-	5-212	L314	RH switch panel	33-12-00 R/I	
(49) 3CM panel floodlamps	-	214	L288-L294	Top of 3CM management panels	33-12-00 R/I	

					MANUAL REF.	
ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MAINT. TOPIC	WIRING DIAGRAM
(50) 3CM panel fwd spot lamp	-	213	L286	Flt. compt. roof	33-12-00 R/I	
(51) 3CM panel aft spot lamp	-	213	L287	Flt. compt. roof	33-12-00 R/I	
(52) 3CM reading lamp	-	214	L313	Flt. compt. roof	33-12-00 R/I	
(53) First supernumerary's floodlamp	-	213	L295	Flt. compt. roof	33-12-00 R/I	
(54) LH racking inspection lamps	-	12-215	L296-L299	Flt. compt. LH rack	33-12-00 R/I	
(55) RH racking inspection lamps	-	12-216	L300-L303	Flt. compt. RH rack	33-12-00 R/I	

Component Identification
Table 101

MAIN LIGHTING - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains instructions for the renewal of faulty filaments or fluorescent tubes in the lamp assemblies listed below. Where necessary, instructions are also detailed for the removal and installation of the complete lamp assembly.

Forward and racking area roof lamps.

Dashboard floodlamps.

Dashboard storm floodlamps.

Centre console floodlamp.

Pilots' chart lamps.

Pilots' chart stowage lamps.

Pilots' floor floodlamps.

Pilots' oxygen mask stowage floodlamps.

3CM panel floodlamps.

3CM reading lamp.

First supernumerary's floodlamp.

The removal and installation of associated switches mounted on the pilots' roof panel is detailed in 33-00-00. Removal and installation of switches on all other panels is detailed in 33-10-00.

2. Forward or Racking Area Roof Lamp

A. Fluorescent Tube or Emergency Filament Renewal

(1) Ensure that the appropriate roof lamp switch and the pilots' emergency lighting switch are at 'off' and that the steward's emergency lighting switch is at NORMAL.

(2) Unscrew the lens securing screws and remove the lens.

(3) Renew the faulty tube or filament.

(4) Position the lens and secure it with the screws.

(5) Check that the filament or tube lights, by carrying out the appropriate test.

3. Dashboard Floodlamps (Ref. Fig. 401)

A. Filament Renewal

(1) Ensure that the LH/CENTRE or RH DASH FLOOD dimmer switch, as appropriate, is at OFF.

R (2) Release the quick-release fastener(s) securing the
R appropriate lamp cover to the lamp holder and remove
R the cover from the lamp.

R (3) Renew the faulty filament.

R (4) Refit the lamp cover.

R (5) Check that the filament lights, by carrying out the appropriate test.

4. LH or RH Dashboard Storm Floodlamp

A. Fluorescent Tube Renewal

(1) Select "OFF" at the STORM floodlight switch on the pilots' roof panel.

(2) Renew the fluorescent tube below the LH or RH dashboard as required. There is direct access to each tube.

(3) Check that both fluorescent tubes light, by carrying out the appropriate test.

5. Centre Dashboard Storm Floodlamp (Ref. Fig. 401)

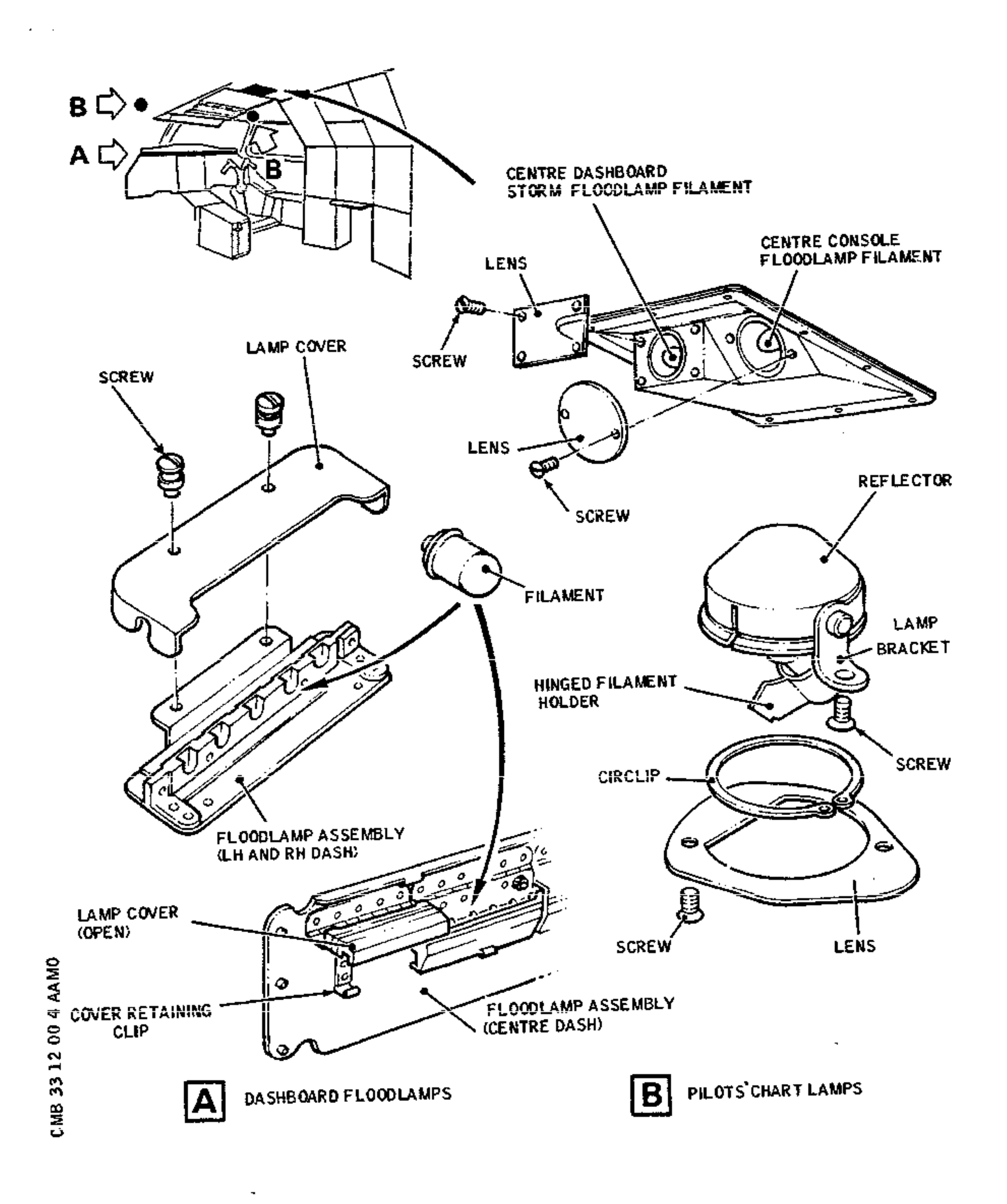
A. Filament Renewal

(1) Select "OFF" at the STORM floodlight switch on the pilots' roof panel.

(2) Unscrew the screws securing the square lens to the lamp in the roof floodlamp assembly and remove the lens.

(3) Renew the faulty filament.

(4) Refit the lens and secure it with the screws.



- Main Lighting - Chart, Dashboard and
Centre Console Lamps
Figure 401

(5) Check that the filament lights, by carrying out the appropriate test.

B. Floodlamp Removal/Installation

(1) Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

(2) Prepare

(a) Select "OFF" at the STORM and at the CENTRE CONSOLE floodlight switches on the pilots' roof panel.

(b) Trip the CTR DASH STORM FLOOD SUP circuit breaker L305 on panel 15-215, map ref.F14, and the CTR CONSOLE SPOT SUP circuit breaker L236 on panel 5-213, map ref.B19, and fit safety clips.

(3) Remove

(a) Unscrew the lamp assembly securing screws, withdraw the lamp assembly complete with two floodlamps, and support it at the extent of the electrical cables.

(b) Disconnect the electrical cables from the appropriate floodlamp.

(c) Release the screws securing the floodlamp in its bracket and remove the floodlamp.

(4) Install

(a) Comply with the electrical safety precautions.

(b) Position the floodlamp in its bracket and secure it with the screws.

(c) Connect the electrical cable to the floodlamp, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(d) Position the lamp assembly, complete with two floodlamps, and secure it with the screws.

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(5) Conclusion

(a) Make available electrical ground power as detailed in 24-41-00.

(b) Remove the safety clips and reset the circuit breakers tripped before removal.

(c) Select "ALL" at the STORM floodlight switch and check that the filament lights.

(d) Set the STORM floodlight switch to "OFF".

(e) Switch off and disconnect electrical ground power as detailed in 24-41-00.

6. Centre Console Floodlamp (Ref. Fig. 401)

A. Filament Renewal

(1) Select "OFF" at the CENTRE CONSOLE FLOOD dimmer switch on the pilots' roof panel.

(2) Unscrew the screws securing the circular lens to the roof floodlamp assembly and remove the lens.

(3) Renew the faulty filament.

(4) Refit the lens and secure it with the screws.

(5) Check that the filament lights, by carrying out the appropriate test.

B. Floodlamp Removal/Installation

(1) Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

(2) Prepare

(a) Select "OFF" at the STORM and at the CENTRE CONSOLE floodlight switches on the pilots' roof panel.

(b) Trip the CTR DASH STORM FLOOD SUP circuit breaker L305 on panel 15-215, map ref.F14, and the CTR CONSOLE SPOT SUP circuit breaker L236 on panel 5-213, map ref.B19, and fit safety clips.

(3) Remove

(a) Unscrew the lamp assembly securing screws, withdraw the lamp assembly complete with two floodlamps, and support it at the extent of the electrical cables.

(b) Disconnect the electrical cables from the appropriate floodlamp.

(c) Release the screws securing the floodlamp in its bracket and remove the floodlamp.

(4) Install

(a) Comply with the electrical safety precautions.

(b) Position the floodlamp in its bracket and secure it with the screws.

(c) Connect the electrical cables to the floodlamp, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(d) Position the lamp assembly, complete with two floodlamps, and secure it with the screws.

(5) Conclusion

(a) Make available electrical ground power as detailed in 24-41-00.

(b) Remove the safety clips and reset the circuit breakers tripped before removal.

(c) Switch on at the CENTRE CONSOLE FLOOD dimmer switch and check that the filament lights.

(d) Set the CENTRE CONSOLE FLOOD dimmer switch to "OFF".

(e) Switch off and disconnect electrical ground power as detailed in 24-41-00.

7. <u>Pilot's Chart Lamp</u> (Ref. Fig. 401)

A. Filament Renewal

(1) Trip the CHART STOWAGE LTS SUP circuit breaker L237 on panel 15-216, map ref.D12, and fit a safety clip.

(2) Unscrew the screws securing the lens covering the appropriate lamp assembly and remove the lens.

(3) Rotate the wire circlip to release the filament holder.

(4) Swing the filament holder open on its hinge.

(5) Renew the faulty filament.

(6) Close the filament holder and secure it with the circlip.

(7) Fit the lens and secure it with the screws.

(8) Remove the safety clip and reset the circuit breaker previously tripped.

(9) Check that the filament lights, by carrying out the appropriate test.

8. Pilots' Chart Stowage Lamp (Ref. Fig. 402)

A. Filament Renewal

(1) Select "OFF" at the appropriate CHART STOWAGE light switch and renew the filament at the rear end of the switch panel. There is direct access to the filament.

(2) Check that the filament lights, by carrying out the appropriate test.

B. Lamp Removal/Installation

(1) Prepare

(a) Remove the LH or RH switch panel as detailed in 33-10-00.

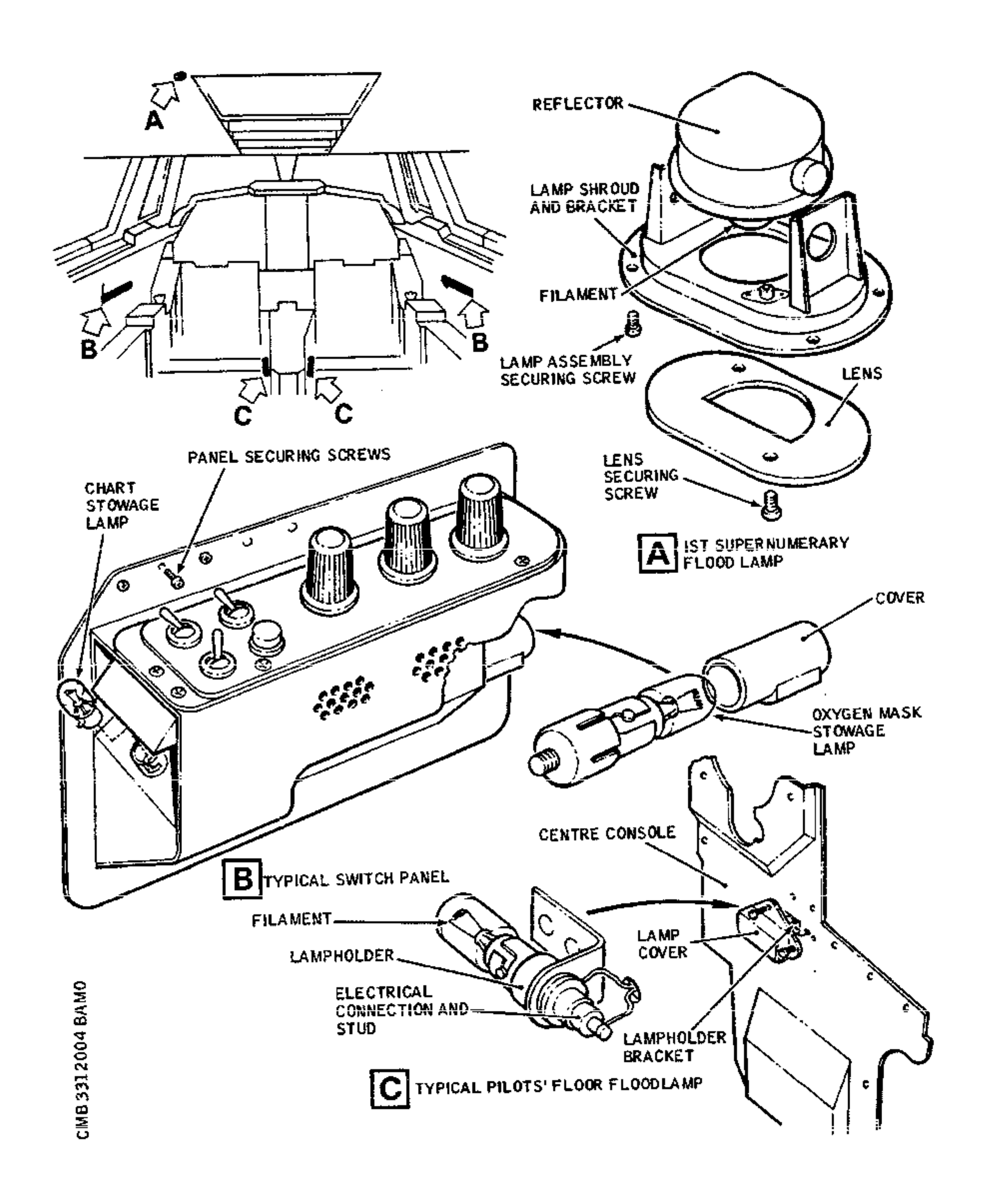
(2) Remove

(a) Disconnect the electrical cable from the lamp fitting.

(b) Unscrew the nut securing the lamp fitting and remove the chart stowage lamp.

(3) Install

(a) Comply with the electrical safety precautions.



Main Lighting - Stowage, Floor and 1st Supernumerary Lamps
Figure 402

(b) Position the lamp fitting and secure it with the nut.

(c) Connect the electrical cable to the lamp fitting, ensuring that the connections are made in accordance with the cable identifications and applicable wiring diagram.

(d) Position the LH or RH switch panel as appropriate and secure it with the screws.

(4) Conclusion

(a) Remove the safety clips and reset the circuit breakers tripped before removal.

(b) Make available electrical ground power as detailed in 24-41-00.

(c) Select "ON" at the appropriate CHART STOWAGE light switch and check that the filament lights.

(d) Select "OFF" at the CHART STOWAGE light switch.

(e) Switch off and disconnect electrical ground power as detailed in 24-41-00.

9. Pilots' Floor Floodlamp (Ref. Fig. 402)

A. Filament Renewal

(1) Select "OFF" at the LH or RH pilot's CHART STOWAGE light switch as appropriate.

(2) Unscrew the floor floodlamp cover securing screws and remove the cover.

(3) Renew the filament.

(4) Position the cover and secure it with the screws.

(5) Check that the filament lights, by carrying out the appropriate test.

10. Pilots' Oxygen Mask Stowage Floodlamp (Ref. Fig. 402)

A. Filament Renewal

(1) Select "OFF" at the LH or RH SIDE CONSOLE switch as appropriate.

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(2) Pull the cover from the lamp fitting at the forward end of the LH or RH switch panel as appropriate.

(3) Renew the filament and refit the lamp cover.

(4) Check that the filament lights, by carrying out the appropriate test. Ensure that the lens in the light cover directs the light at the oxygen mask stowage.

(5) Select "OFF" at the appropriate SIDE CONSOLE switch.

B. Floodlamp Removal/Installation

(1) Prepare

(a) Remove the LH or RH switch panel as detailed in 33-10-00.

(2) Remove

(a) Disconnect the electrical cable from the lamp fitting.

(b) Unscrew the nut securing the lamp fitting and remove the chart stowage lamp.

(3) Install

(a) Comply with the electrical safety precautions.

(b) Position the lamp fitting and secure it with the nut.

(c) Connect the electrical cable to the lamp fitting, ensuring that the connections are made in accordance with the cable identifications and applicable wiring diagram.

(d) Position the LH or RH switch panel as appropriate and secure it with the screws.

(4) Conclusion

(a) Make available electrical ground power as detailed in 24-41-00.

(b) Remove the safety clips and reset the circuit breakers tripped before removal.

(c) Select "ON" at the appropriate SIDE CONSOLE

switch and check that the filament lights.

(d) Select "OFF" at the appropriate SIDE CONSOLE switch.

(e) Switch off and disconnect electrical ground power as detailed in 24-41-00.

11. <u>3CM Panel Floodlamps</u> (Ref. Fig. 403)

A. Filament Renewal

(1) Select "OFF" at the FLOOD lighting switch on the 3CM switch panel.

(2) There is direct access to the filaments of the panel mounted floodlamps. For the roof-mounted floodlamps, unscrew the screws securing the lens and remove the lens.

(3) Renew faulty filament.

(4) Refit lens if necessary.

(5) Check that the filament lights, by carrying out the appropriate test.

(6) Select "OFF" at the FLOOD lighting switch.

B. Roof-mounted Floodlamp - Removal/Installation

(1) Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

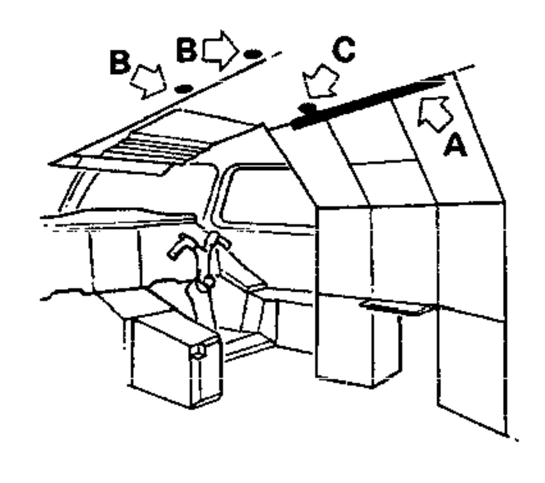
(2) Prepare

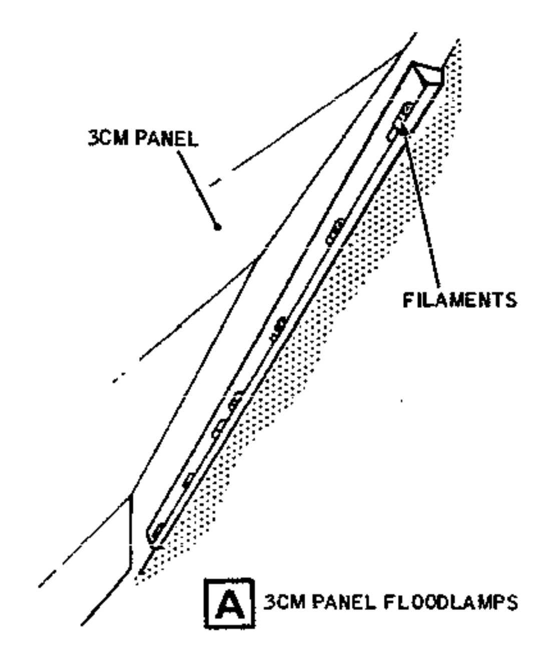
(a) Select "OFF" at the FLOOD and reading lamp SPOT switches on the 3CM switch panel.

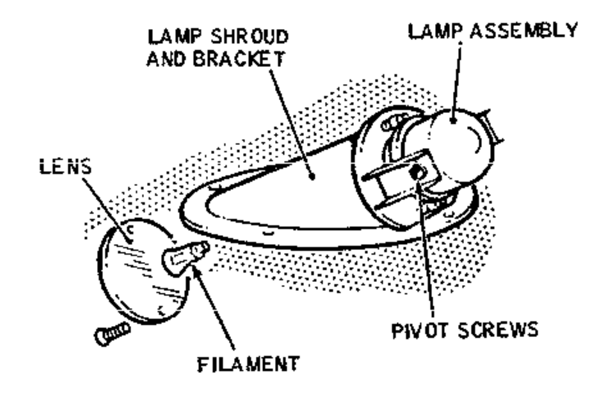
(b) Trip the 3CM FLOOD & READING LTS SUP circuit breaker L238 on panel 1-213, map ref.N22, and fit a safety clip.

(3) Remove

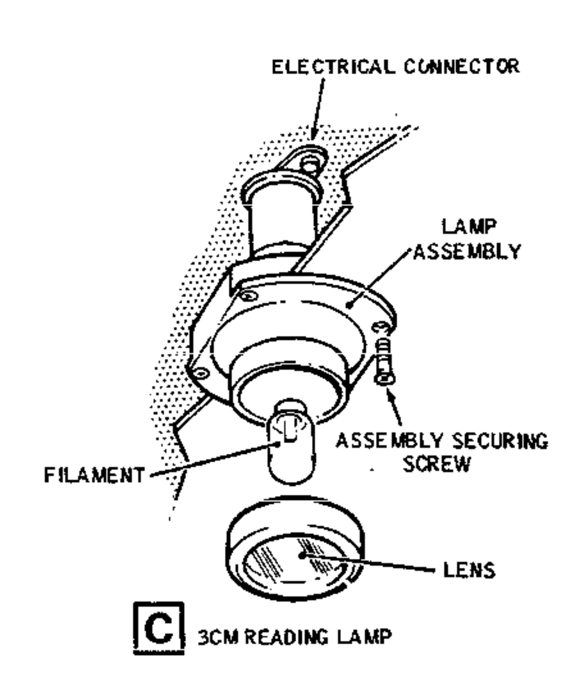
(a) Unscrew the screws securing the lamp shroud to the aircraft structure.











- Main Lighting - 3CM Panel and Reading Lamps
Figure 403

(b) Withdraw the shroud complete with lamp sufficiently to gain access to the electrical connections.

(c) Using a suitable tool, disconnect the electrical cables from the adjacent terminal block and remove the shroud complete with lamp.

(d) Release the lamp pivot screws and remove the lamp from the bracket.

(4) Install

(a) Comply with the electrical safety precautions.

(b) Position the lamp in the bracket and secure it with the pivot screws.

(c) Support the shroud complete with lamp and pass the electrical cables through the ceiling opening.

(d) Connect the electrical cables to the associated terminal block, using a suitable tool. Ensure that the connections are made in accordance with the cable identifications and applicable wiring diagram.

(e) Position the lamp shroud in the aircraft structure and secure it with the screws.

(f) Remove the safety clip and reset the circuit breaker tripped before removal.

(5) Conclusion

(a) Make available electrical ground power as detailed in 24-41-00.

(b) Switch on at the FLOOD lighting switch and check that the filament lights.

(c) Switch off at the FLOOD lighting switch.

(d) Switch off and disconnect electrical ground power as detailed in 24-41-00.

12. <u>3CM Reading Lamp</u> (Ref. Fig. 403)

A. Filament Renewal

(1) Switch off at the reading lamp switch engraved SPOT.

(2) Remove the push-fit lens.

(3) Renew the filament.

(4) Refit the lens.

(5) Check that the filament lights, by carrying out the appropriate test.

B. Lamp Removal/Installation

(1) Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

(2) Prepare

(a) Select "OFF" at the reading lamp SPOT and at the FLOOD lighting switches on the 3CM switch panel.

(b) Trip the 3CM FLOOD & READING LTS SUP circuit breaker L238 on panel 1-213, map ref.N22, and fit a safety clip.

(3) Remove

(a) Unscrew the screws securing the lamp assembly and withdraw it sufficiently to gain access to the electrical connection.

(b) Disconnect the electrical cable from the lamp-holder and remove the lamp assembly.

(4) Install

(a) Comply with the electrical safety precautions.

(b) Support the lamp assembly and connect the electrical cable to the lampholder, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(c) Position the lamp assembly and secure it with the screws.

(d) Remove the safety clip and reset the circuit breaker tripped before removal.

(5) Conclusion

(a) Make available electrical ground power as detailed in 24-41-00.

(b) Switch on at the reading lamp SPOT switch and check that the lamp lights.

(c) Switch off at the reading lamp SPOT switch.

(d) Switch off and disconnect electrical ground power as detailed in 24-41-00.

13. First Supernumerary's Floodlamp (Ref. Fig. 402)

A. Filament Renewal

(1) Select "OFF" at the first supernumerary's FLOOD lighting switch on circuit breaker panel 3-213.

(2) Unscrew the lens securing screws and remove the lens.

(3) Renew the filament.

(4) Refit the lens and secure it with the screws.

(5) Check that the filament lights, by carrying out the appropriate test.

B. Floodlamp Removal/Installation

(1) Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

(2) Prepare

(a) Select "OFF" at the first supernumerary's floodlighting switch on circuit breaker panel 3-213.

(b) Trip the 1st SUPERN'Y SPOT SUP circuit breaker L240 on panel 15-215, map ref.B13, and fit a safety clip.

(3) Remove

(a) Unscrew the lamp assembly securing screws and withdraw the lamp assembly sufficiently to gain access to the electrical connections.

(b) Disconnect the electrical connections from the adjacent terminal block, using a suitable tool, and remove the lamp assembly complete with shroud and lens.

(c) Release the lamp pivot screws and remove the lamp from the bracket.

(4) Install

(a) Comply with the electrical safety precautions.

(b) Support the lamp assembly and connect the electrical cable to the lampholder, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(c) Position the lamp assembly and secure it with the screws.

(d) Remove the safety clip and reset the circuit breaker tripped before removal.

(5) Conclusion

(a) Make available electrical ground power as detailed in 24-41-00.

(b) Switch on at the reading lamp SPOT switch and check that the lamp lights.

(c) Switch off at the reading lamp SPOT switch.

(d) Switch off and disconnect electrical ground power as detailed in 24-41-00.

MAIN LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

R This topic contains an Operational Test which details the
R procedure to prove the correct operation of the flight
R compartment main lighting, and a specific self-contained
R test of the storm lighting. Functional and System Tests
R are not considered necessary.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test

(1) Select "ON" at the ROOF switch on the LIGHTS section of the flight compartment roof panel 4-211 and check that both tubes in the forward roof lamp assembly are lit.

(2) Select "OFF" at the switch and check that the light goes out.

(3) Slowly rotate the RH DASH FLOOD control switch on the RH switch panel 5-212 and check that the right-hand dashboard floodlamps light and that the light becomes progressively brighter.

(4) Slowly rotate the LH and CENTRE DASH FLOOD control switch on the left-hand switch panel 12-211 and check that the centre and left-hand floodlamps light and that the light becomes progressively brighter.

(5) Check that all filament lamps in the dashboard floodlight assemblies are lit.

(6) Slowly rotate each DASH FLOOD switch toward OFF and check that the associated floodlighting is progressively dimmed and then goes out. Leave each switch at OFF.

(7) Select "LH/RH DASH" at the STORM control switch on the roof panel 4-211 and check that the two tubes,

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one under the LH and one under the RH glareshield, are illuminated.

(8) Select "ALL" at the STORM control switch and check that the centre dashboard storm floodlight in the roof is lit, in addition to the two tubes which illuminate the LH and RH dashboards.

(9) Select "OFF" at the STORM control switch.

(10) Rotate the CENTRE CONSOLE FLOOD switch, on the roof panel 4-211, fully clockwise and check that the centre console is illuminated by the associated spotlight in the roof. Check that the light becomes progressively brighter as the control switch is rotated. Return the switch to "OFF".

(11) Press the CHART LIGHT push-switch on the right-hand switch panel 5-212 and check that the pilot's right-hand chart area is illuminated by the associated chart light in the roof.

(12) Slowly rotate the CHART LIGHT dimmer control clockwise and check that the chart light becomes progressively brighter.

(13) Press the CHART LIGHT push-switch and check that the chart light goes out.

(14) Repeat operations (11), (12) and (13) as applied to the CHART LIGHT control on the left-hand switch panel 12-211 and the pilot's left-hand chart light.

(15) Select "ON" at the STOWAGE FLOOD control switch on the right-hand switch panel 5-212 and check that the right-hand chart stowage area is illuminated by the associated chart stowage light and that the RH floor floodlights light. Select "OFF" at the switch.

(16) Select "ON" at the STOWAGE FLOOD control switch on the left-hand switch panel 12-211 and check that the left-hand chart stowage area is illuminated by the associated chart stowage light and that the LH floor floodlights light. Select "OFF" at the switch.

(17) Slowly rotate the SIDE CONSOLE control switch (Ref. 33-17-00) on the right-hand console 1-212 and check that the right-hand oxygen mask stowage area is illuminated by the associated oxygen mask

stowage light and that the light becomes progressively brighter. Return the switch to "OFF".

(18) Slowly rotate the SIDE CONSOLE control switch (Ref. 33-17-00) on the left-hand console 1-211 and check that the left-hand oxygen mask stowage area is illuminated by the associated oxygen mask stowage light and that the light becomes progressively brighter. Return the switch to "OFF".

(19) Rotate the FLOOD control switch, on the third crew member's (3CM) lighting control panel 11-214, fully clockwise. Check that the 3CM station is illuminated by the filament floodlight assemblies, fitted at the top of the 3CM management panels, and by the two spotlights in the roof. Check that the lights become progressively brighter as the control switch is rotated. Return the switch to "OFF".

(20) Slowly rotate the SPOT control switch on the 3CM lighting control panel 11-214 and check that the 3CM reading light in the roof is lit and that the light becomes progressively brighter. Return the switch to "OFF".

(21) Slowly rotate the FLOOD control switch on circuit breaker panel 3-213 and check that the 1st supernumerary's floodlamp in the roof is lit and that the light becomes progressively brighter.

(22) Switch on at the RACKING AREA LTS. - ROOF switch on the oxygen panel 20-215 and check that both tubes in the racking area roof lamp are lit.

(23) Switch off at the RACKING AREA switch on the forward steward's control panel and check that the light goes out.

(24) Repeat operations (22) and (23).

(25) Switch on at the RACKING AREA LTS. - INSP. control switch on the oxygen panel 20-215 and check that the filament lamps in the rack upper structure on the LH and RH equipment racks are lit.

(26) Switch off at the RACKING AREA LTS. - INSP. switch.

(27) Check that all flight compartment main lighting is out.

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

R 3. Storm Lighting - Test

R A. Prepare

R (1) Make available electrical ground power as detailed
R in 24-41-00.

R B. Test

R (1) Select "LH/RH DASH" at the STORM control switch
R on the roof panel 4-211 and check that the two
R tubes, one under the LH and one under the RH
R glareshield, are illuminated.

R (2) Select "ALL" at the STORM control switch and
R check that the centre dashboard storm floodlight
R in the roof is lit, in addition to the two tubes
R which illuminate the LH and RH dashboards.

R (3) Select "OFF" at the STORM control switch.

R C. Conclusion

R (1) Switch off and disconnect electrical ground
R power as detailed in 24-41-00.

BALLAST UNITS - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

This topic details the operations necessary for the removal and installation of six ballast units associated with the flight compartment main lighting system.

Two ballast units associated with the left and right dash storm floodlights are mounted on the underside of the glareshield, two ballast units associated with the flight compartment roof lights are located on the 3CM station secondary structure behind the upper electrical services panel, and two racking area roof lights ballast units are mounted in the flight compartment right hand upper racking on shelf 12-216.

2. Storm Floodlight Ballast Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

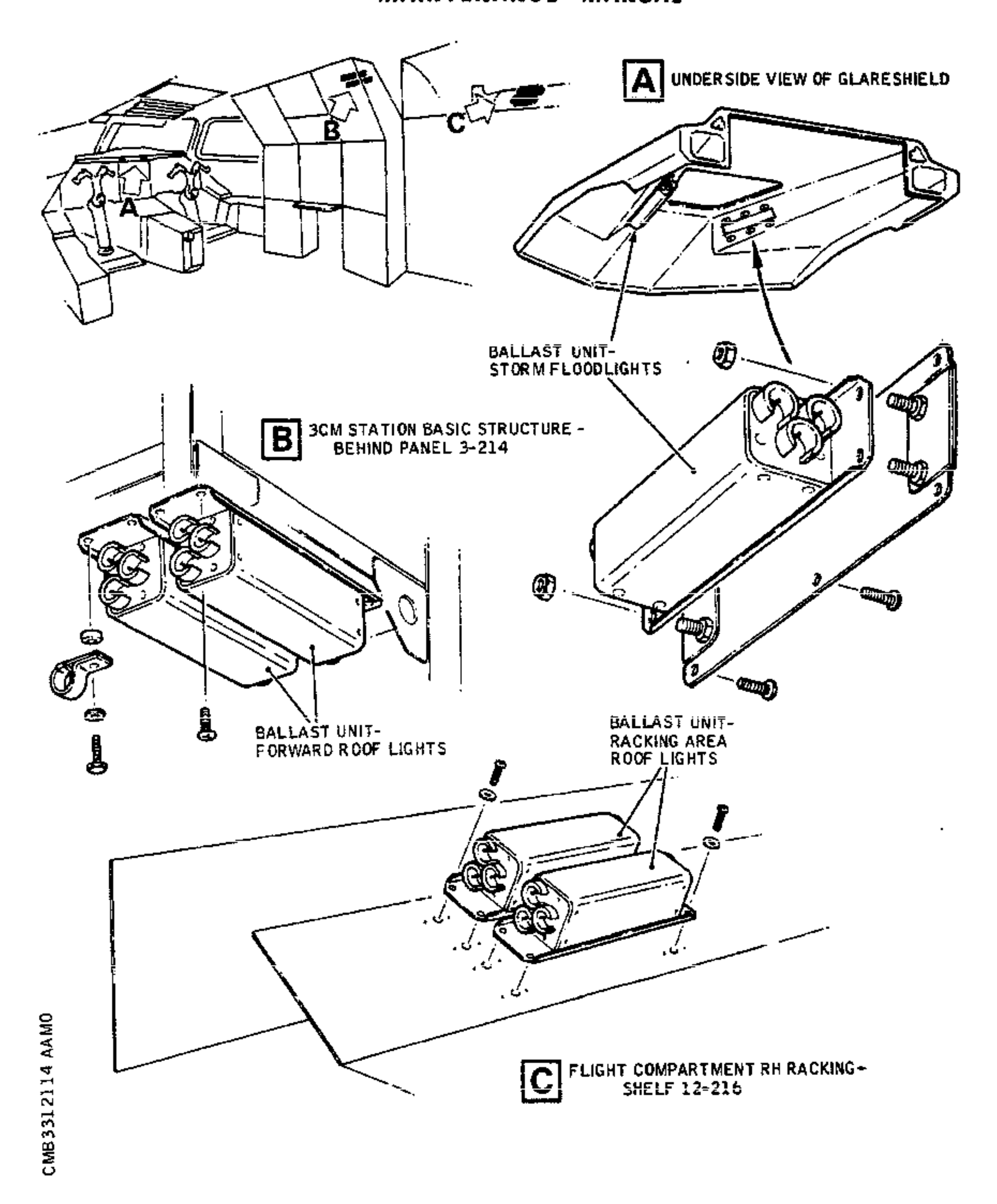
(1) Check that the STORM lights selector switch on the flight compartment roof panel is at OFF.

(2) Trip the RH & LH DASH STORM FLOODS SUP circuit breaker, L231, on panel 14-216, map ref.A8, and fit a safety clip.

C. Remove

(1) From the top of the centre glareshield remove the six screws securing the ballast unit mounting plate to the exterior of the glareshield, and withdraw the mounting plate complete with ballast unit from the aperture in the glareshield to the extent of the cables.

(2) Disconnect the electrical cables from the ballast unit.



Ballast Units - Installation
Figure 401

(3) Separate the ballast unit from the mounting plate by removing the four self-locking nuts.

D. Install

(1) Comply with the electrical safety precautions.

(2) Secure the ballast unit to the mounting plate with the four self-locking nuts.

(3) Connect the electrical cables to the ballast unit, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Insert the ballast unit through the aperture in the glareshield and secure the mounting plate to the glareshield exterior with the six screws.

(5) Check that the ballast unit is bonded in accordance with 20-27-11.

E. Conclusion

(1) Remove the safety clip and reset the storm flood-light circuit breaker on panel 14-216.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Set the STORM lights selector switch on the flight compartment roof panel to "LH/RH DASH" and check that the LH and RH dash storm floodlamps are lit.

(4) Set the STORM switch to "OFF".

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Racking Area Roof Lights Ballast Unit

A. Prepare

(1) Isolate the electrical generation and external power equipment as detailed in 24-00-00, Servicing.

(2) Gain access to the ballast units on the flight compartment right hand racking upper structure by opening the appropriate circuit breaker panels.

B. Remove

(1) Disconnect the electrical cables from the associated ballast unit.

(2) Remove the four screws and washers securing the ballast unit to the shelf and withdraw the unit from its mounting.

C. Install

(1) Comply with the electrical safety precautions.

(2) Fit the ballast unit to its mounting on the upper racking structure and secure it with the four screws and washers.

(3) Connect the electrical cables to the ballast unit, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Check that the ballast unit is bonded in accordance with 20-27-11.

D. Conclusion

(1) Close and secure the circuit breaker panels.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Operate the RKG AREA LTS - ROOF switch on the oxygen panel (20-215) and check that the racking area roof lights are on.

(4) Switch off the racking area roof lights.

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

4. Flight Compartment Roof Lights Ballast Unit

A. Prepare

(1) Isolate the electrical generation and external power equipment as detailed in 24-00-00, Servicing.

(2) Gain access to the ballast units on the 3CM station secondary structure by releasing the quick-release fasteners around the periphery of the upper electrical services panel (3-214), and lowering the panel on its hinges.

B. Remove

(1) Disconnect the electrical cables from the associated ballast unit.

(2) Support the ballast unit. Remove the four screws securing the ballast unit to the top of the structure and withdraw the unit from its mounting.

C. Install

(1) Comply with the electrical safety precautions.

(2) Fit the ballast unit to its mounting on top of the the 3CM station structure and secure it with the four screws. Cover the screws protruding through the anchor nuts in accordance with 20-25-12.

(3) Connect the electrical cables to the ballast unit, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Check that the ballast unit is bonded in accordance with 20-27-11.

D. Conclusion

(1) Close panel 3-214 and secure it to the structure with the quick-release fasteners.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Set the ROOF lights switch on the flight compartment roof panel to "ON" and check that the flight compartment roof lights are on.

(4) Set the ROOF lights switch to "OFF".

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

END OF THIS SECTION

NEXT

LIGHTS TEST AND DIMMING - DESCRIPTION AND OPERATION

1. General

The lights test and dimming system allows the filaments of caption light modules and warning lamps, mounted in the flight compartment, to be tested or dimmed. For these purposes the filaments are connected in groups and each group is connected to an associated three-position switch engraved LO-HI-TEST. Some lamp units have their own dimmer, fitted as a separate dimming module for warning lights in dashboard-mounted instruments and
B as an integral part of all other units. "Mod 33 D090" removes
B the dimming facility from the "brakes fail" caption. When a
B brake failure is detected the caption will always illuminate
B at full brilliance. When testing the system the caption will
B also illuminate at full brilliance when the centre console light
B test switch is set at "LOW".

RB After SB 33-026 For A/C 006-007,

A relay controls the supply to a group of caption light modules and warning lights on some of the RH panels at the third crew member's (3CM) station.

Individual fuses are provided for the caption light modules and warning light units listed in Table 1. The fuses are located in the loom wiring near their associated caption or warning light.

ASSOCIATED CAPTION OR WARNING LIGHT	LOCATION	PANEL
Engine rating light unit	LH dash panel	2-211
INS warning light unit	LH dash panel	2-211
INNER ELEVON caption	RH dash panel	2-212
FLOW captions (3)	Cabin temperature/air bleed and fuel panel	2-214

Location of In-Line Fuses
Table 1

RB After CM 42663 For A/C 001-005,

RB Individual fuses are provided for the caption light modules and
RB warning light units listed in Table 1, the fuses are located in
RB the loom wiring near their associated caption or warning light.

RB In addition the fuses listed in Table 1, 4 in-line fuses are
RB located in the Fire Bottle Test Panel (28-214). These fuses are
RB connected in the lights test supply to 4 of the 5 groups of
RB smoke detector warning lights.

2. Caption Light Module

Each caption light module comprises a rectangular unit housing an electrical terminal block, filament contacts and blocking diodes. Certain modules are fitted with a solid state switching circuit and a dimming resistor. A hinged cover contains two filaments behind a translucent caption screen. Some caption light modules are provided with a press-to-test switching facility which illuminates the caption from a supply in its associated system.

3. Dimming Module

Each dimming module comprises a rectangular unit housing terminal blocks, blocking diodes, a solid state switching circuit and a dimming resistor.

RB
RB After SB 33-026 For A/C 006-007,

4. Test Isolation Relay

The relay comprises a rectangular unit housing a 4-pole, 10 A relay, hermetically sealed with plug-in terminals mated to socket contacts in a relay base. It is mounted on the structure behind panel 6-214 (3CM station, lower electrical services panel) and, when energized by the setting of the panel LO-HI-TEST switch to TEST, it controls the supply to a group of caption light modules and warning lights on the following RH panels at the 3CM station:

6-214 - lower electrical services panel.

3-214 - upper electrical services panel.

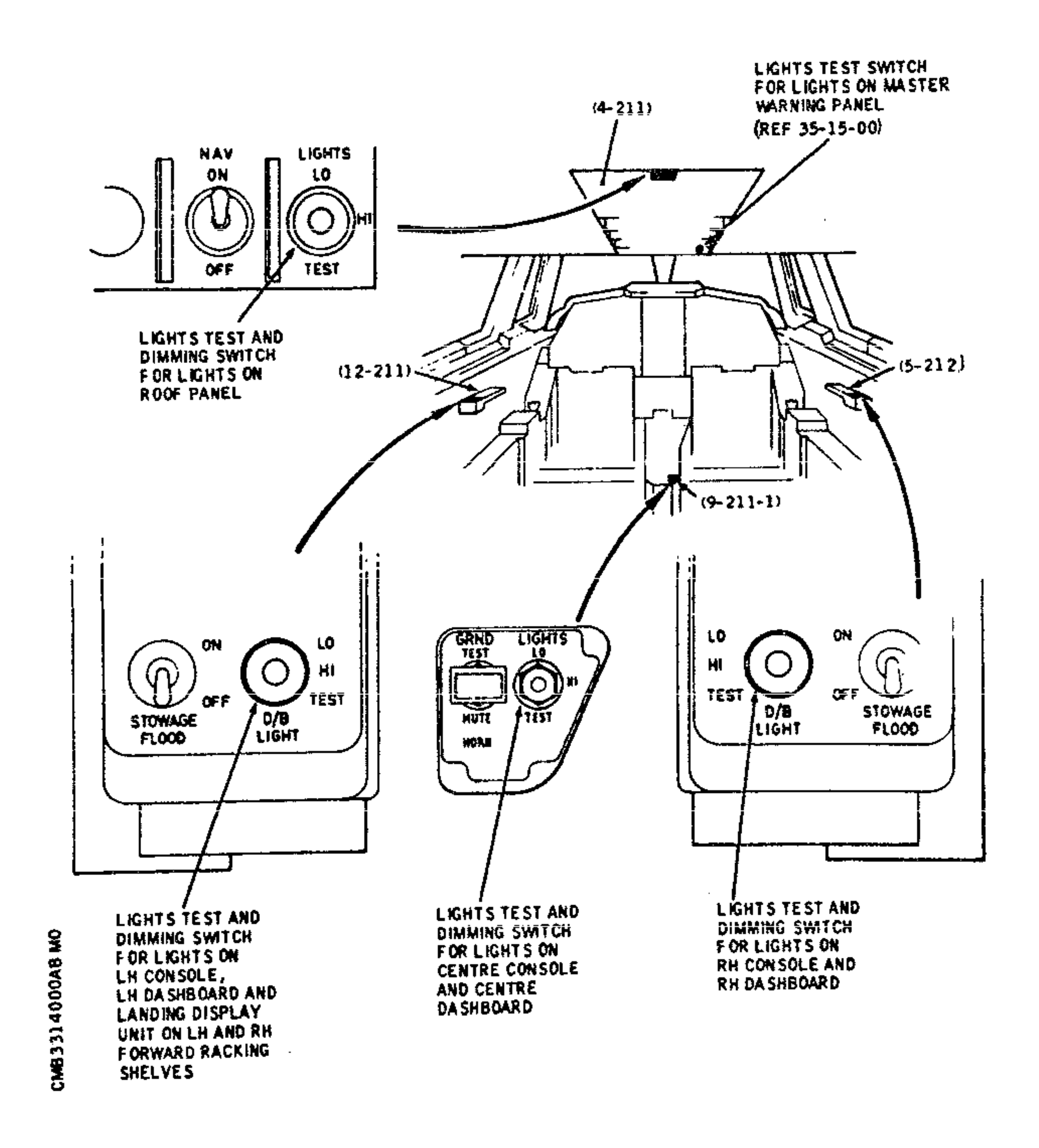
28-214 - fire bottle test panel.

RB After CM 42663 For A/C 001-005,

RB The Test Isolation Relay introduced by SB 33-026 is not fitted
RB to aircraft modified to CM 42663.

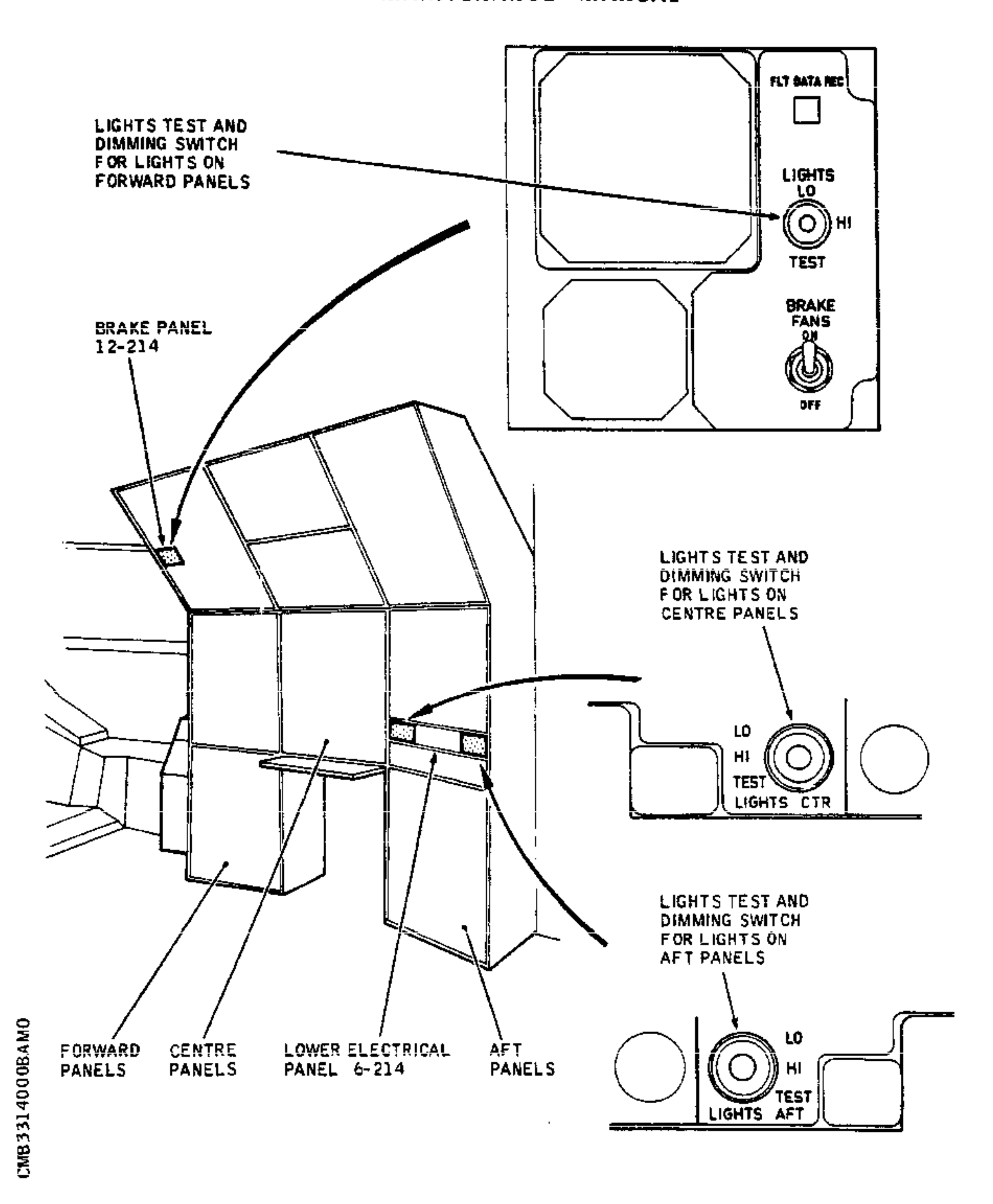
5. Operation (Ref. Fig. 001 and 002)

A. Control



RB

Lights Test and Dimming - Pilot's Station
Figure 001



\- Lights Test and Dimming - 3CM Station
Figure 002

RB After SB 33-026 For A/C 006-007,

Three position switches, engraved LO-HI-TEST and spring-loaded from TEST to HI, are fitted in the pilot's and 3CM stations. Each switch is associated with the appropriate caption and warning light filaments mounted on the panels (Ref. Fig. 001 and 002). In the TEST position, the switch controls the supply to the filaments either direct, or via in-line fuses or a relay. In the HI and LO positions, the switch controls the supply to the associated dimmers.

RB After CM 42663 For A/C 001-005,

RB Control of the lights test function on post mod CM 42663
RB aircraft is, with one exception, the same as post mod SB
RB 33-026 aircraft. The control relay introduced by SB 33-
RB 026 (L1111) does not exist on post CM 42663 aircraft and the
RB captions associated with this relay cannot be tested using
RB the LIGHTS AFT LO-HI-TEST switch on the 3CM station.

B. Functional Description

RB After SB 33-026 For A/C 006-007

Some captions and warning lights may be lit whenever power is available from the aircraft distribution system.

When a LO-HI-TEST switch is depressed and held at the TEST position, all the associated filaments, if serviceable, light at full brilliance. On release the switch returns to the HI position and the lights go out.

RB

On the pilot's roof panel (4-211) and the centre main power panel (4-214), certain caption light modules and warning lights are not included in the lights test circuit (Ref. Adjustment/Test).

When the switch is set at LO the relay or solid-state dimmer switch, associated with each caption module and warning light, is triggered and disconnects a short-circuiting link from a dimming resistor in the circuit of the associated lamps. In this condition the lamps, if activated by their respective systems, will light at reduced brilliance.

When the switch is set at HI the dimming resistor is short-circuited, and the lamps will light at full brilliance if activated by their respective systems.

Blocking diodes are fitted in the circuit to each caption and warning light to prevent feedback from the associated warning or indication circuit. The diodes are contained within the caption light and dimming modules.

RB After CM 42663 For A/C 001-005,

RB The operation of the Lights Test facility on aircraft with
RB CM 42663 embodied is the same as aircraft with SB33-026
RB embodied, except for captions in Table 2. These captions
RB will not illuminate when the LIGHTS AFT LO-HI-TEST switch on
RB the 3CM station is set to TEST.

	CAPTION	
RB	Emergency Generator Overheat	
RB	AC Essential Bus	1
RB	AC Essential Bus	2
RB	AC Essential Bus	3
RB	AC Essential Bus	4
RB	Emerg Generator Fail	
RB	Battery Isolate	A
RB	Battery Isolate	B
RB	DC Essential Bus	A
RB	DC Essential Bus	B
RB	DC Main Bus	
RB	CSD Oil Low Pressure	1
RB	CSD Oil Low Pressure	2
RB	CSD Oil Low Pressure	3
RB	CSD Oil Low Pressure	4
RB	AC Main Bus Fail	1
RB	AC Main Bus Fail	2
RB	AC Main Bus Fail	3
RB	AC Main Bus Fail	4
RB	Generator	1
RB	Generator	2
RB	Generator	3
RB	Generator	4

RB Captions not connected to Lights
RB Test on Post CM 42663 aircraft

RB Table 2

6. Electrical Power Supplies

The filaments and dimmers controlled by the LIGHTS TEST switches on the roof rear switch panel (4-211) and the 3CM brake panel (12-214) are supplied from the 'B' main 28 V d.c. busbar.

All other filament and dimmer-switched supplies are from the 'A' main 28 V d.c. busbar.

Filament and dimmer supplies with switched earths are supplied from the system being monitored.

LIGHTS TEST AND DIMMING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

Except for the 3CM LH panels light testing circuit, all the light testing circuits are similar, therefore the procedures in Chart 101 are applicable to each circuit. Where two identical components are involved, i.e., one in each circuit, references to the associated components listed in Table 101 are given, e.g., 'Renew Switch (10), (12) or (13)'.
RB "Mod 33 D090" removes the dimming facility from the "brakes
RB fail" caption. When a brake failure is detected the caption
RB will always illuminate at full brilliance. When testing the
RB system the caption will also illuminate at full brilliance when
RB the centre console light test switch is set at "LOW".

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para.2.). Press and hold at TEST Switches (7) to (13) in turn. Check that all caption and warning lamps, associated with each switch and listed in Adjustment/Test, Table 501, are lit. IF -

NOT OK

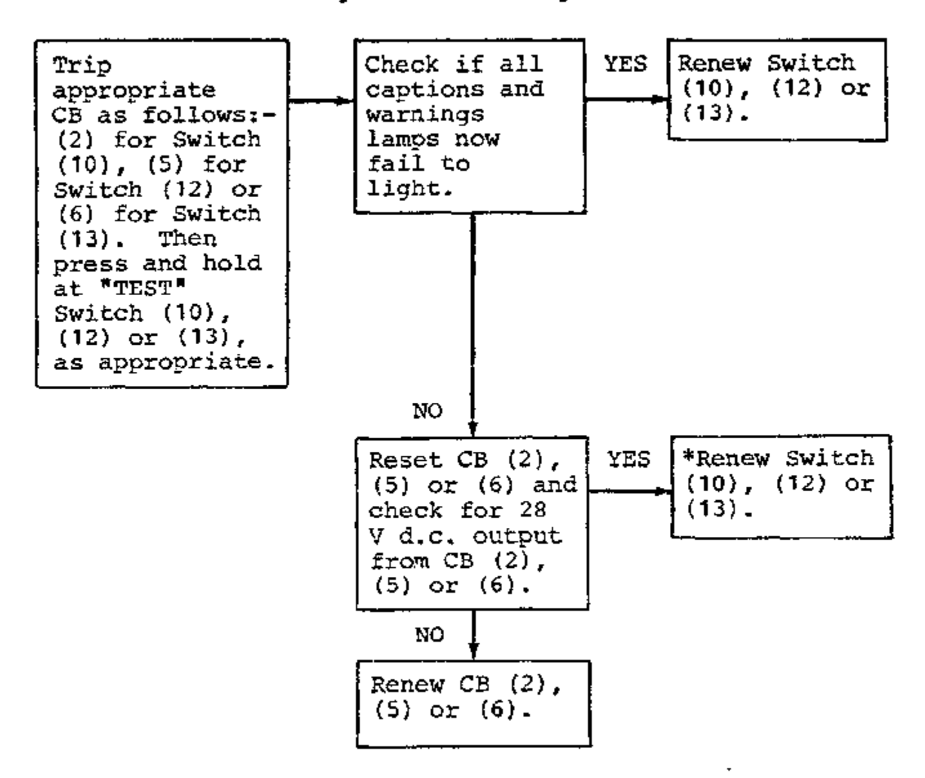
1. Individual caption or warning lamp filaments fail to light - renew faulty filaments.
2. All captions and warning lamps associated with any one switch fail to light - renew appropriate Switch (7) to (13).
3. Some of the captions and warning lamps associated with all three Switches (7), (8) and (9), fail to light - renew CB (1).
4. Some of the captions and warning lamps associated with Switch (10), (12) or (13) fail to light - Chart 101.
5. Some of the captions and warning lamps associated with Switch (11) fail to light - Chart 102.

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SOME OF THE CAPTIONS AND WARNING LAMPS ASSOCIATED WITH SWITCH (10), (12) OR (13) FAIL TO LIGHT, WHEN THE SWITCH IS PRESSED AND HELD AT 'TEST'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.



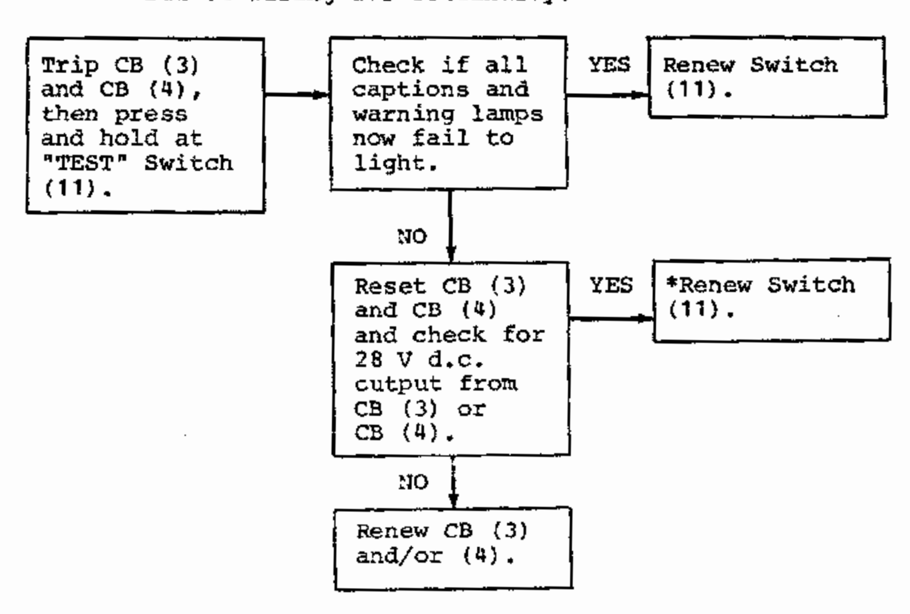
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Chart 101

SOME OF THE CAPTIONS AND WARNING LAMPS ASSOCIATED WITH SWITCH (11) FAIL TO LIGHT WHEN THE SWITCH IS PRESSED AND HELD AT 'TEST'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before removal of components (*), check the preceding run of wiring for continuity.



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Chart 102

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit breaker 28 V	-	15-215	L1001	Map ref.E14	24-50-00 R/I	
(2) Circuit breaker 28 V	-	15-216	L1002	Map ref.D13	24-50-00 R/I	
(3) Circuit breaker 28 V	-	15-216	L1003	Map ref.C12	24-50-00 R/I	
(4) Circuit breaker 28 V	-	15-216	L1004	Map ref.C13	24-50-00 R/I	
(5) Circuit breaker 28 V	-	15-215	L1005	Map ref.D13	24-50-00 R/I	
(6) Circuit breaker 28 V	-	15-215	L1006	Map ref.D14	24-50-00 R/I	
(7) Pilots' LH LIGHTS test switch	-	12-211	L1007	LH switch panel	33-14-00 R/I	
(8) Centre console lights test switch	-	9-211	L1008	Centre console, rear	33-14-00 R/I	
(9) Pilots' RH LIGHTS test switch	-	5-212	L1009	RH switch panel	33-14-00 R/I	
(10) Pilots' roof panel lights test switch	-	4-211	L1010	Pilots' roof panel	33-14-00 R/I	
(11) 3CM LH panels lights test switch	-	12-214	L1011	3CM brake panel	33-14-00 R/I	
(12) 3CM centre panels lights test switch	-	6-214	L1012	3CM elect. services lower panel	33-14-00 R/I	
(13) 3CM RH	-	6-214	L1013	3CM elect.	33-14-00	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
panels lights test switch				services lower panel	R/I	

Component Identification
Table 101

LIGHTS TEST AND DIMMING - REMOVAL INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Access to faulty filaments in caption modules is gained by swinging the translucent caption open on its hinges. Access to filaments in indicator and warning lamps is gained by unscrewing the translucent lens.

Instructions for the removal and installation of associated switches are detailed in 33-00-00 for switches on the pilots' roof panel and in 33-10-00 for switches on all other panels.

After SB 33-026 For A/C 001-005,007-007,

This topic comprises removal and installation procedures for the test isolation relay.

2. Test Isolation Relay (Ref. Fig. 401)

A. Prepare

(1) Isolate the electrical generation and external power supplies as detailed in 24-00-00, Servicing.

(2) Open the lower electrical services panel 6-214 (third crew member's station) to the extent of the tie cord.

B. Remove

(1) Remove the nuts and washers securing the relay to the relay base.

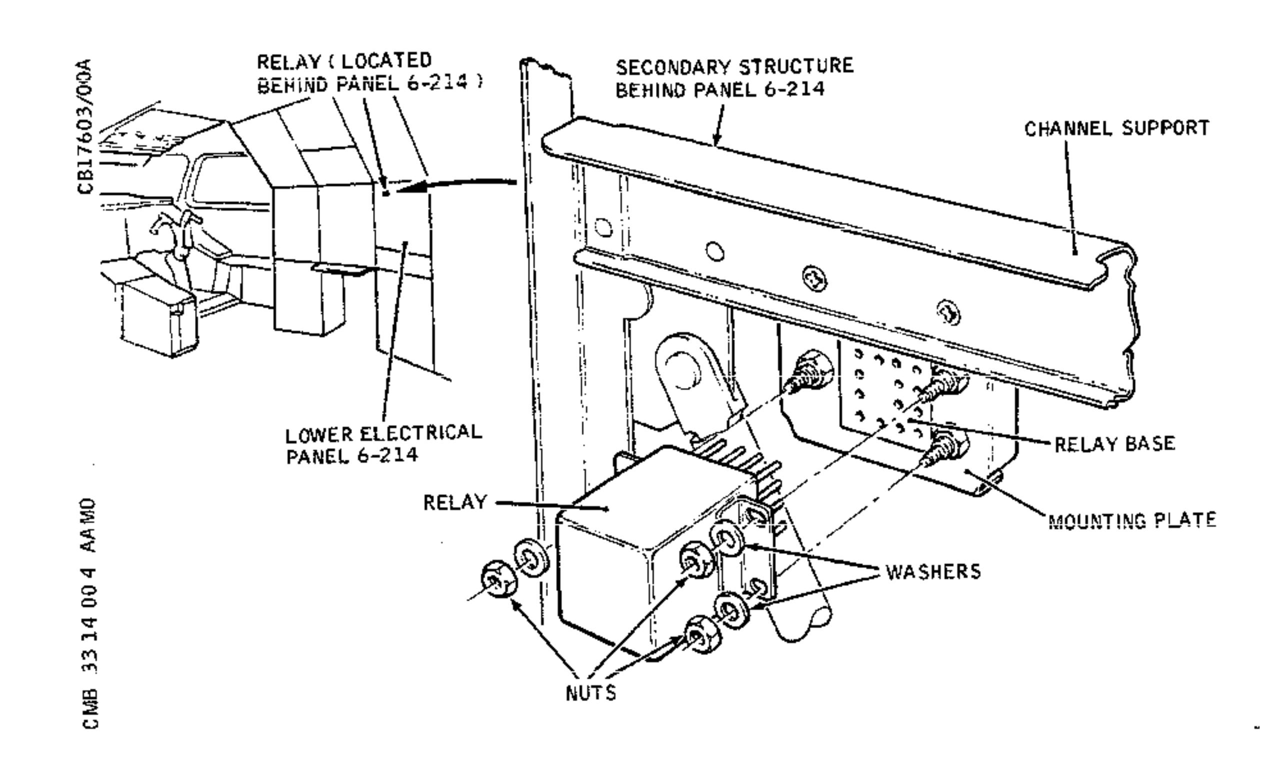
(2) Remove the relay from the relay base.

C. Install

(1) Comply with the electrical safety precautions.

(2) Fit the relay to the relay base.

(3) Secure the relay to the relay base with the



- Test Isolation Relay - Installation
After SB 33-026
Figure 401

nuts and washers; torque-tighten the nuts to 4 lbf in (0.045 mdaN).

D. Conclusion

(1) Close the panel.

(2) Cancel the electrical safety precautions taken in operation A.(1) and remove the warning notices.

(3) Carry out an Operational Test of the lights test and dimming circuit (Ref. Adjustment/Test).

LIGHTS TEST AND DIMMING - ADJUSTMENT/TEST

1. General

Functional and System Tests are not applicable, so this topic contains only an Operational Test, which details the procedure to prove the filaments in the caption and warning light modules
B fitted in the flight compartment. "Mod 33 D090" removes the
B dimming facility from the "brakes fail" caption. When a brake
B failure is detected the caption will always illuminate at full
B brilliance. When testing the system the caption will also
B illuminate at full brilliance when the centre console light
B test switch is set at "LOW".

RB After SB 33-026 For A/C 006-007,

The text is applicable to all modules on the panels listed in Table 501, except for the pilot's roof panel 4-211 and the centre main power panel 4-214 (third crew member's station). The modules associated with the roof panel test switch are listed in Table 501. All modules on the centre main power panel may be tested by the appropriate switch, except for the TCA/Fuel Temp. warning lights.

The HI and LO switch positions control the supply to the associated caption and warning lamp dimmer circuits, and the lamps, when activated by their own systems, light at full or reduced brilliance accordingly.

With only electrical ground power applied to the aircraft distribution system, certain captions and warning lamps are lit by intrinsic fault conditions, e.g., CSD failure, GEN failure, etc.

RB After CM 42663 For A/C 001-005,

RB Operational testing of post mod CM 42663 aircraft is the same as
RB post SB33-026 aircraft except that the captions listed in
RB Table 2 (Ref. page 6 para. 5B) will not illuminate. These
RB captions are tested by pressing the individual captions.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00

B. Test

(1) Press, and hold at TEST each test switch listed in Table 501, in turn, and check that all associated captions and warning lights are fully illuminated and that no master warning signal is initiated.

RB After CM 42663 For A/C 001-005,

RB (2) Check the operation of the captions listed in Table 2
RB (Ref. Page 6 para.5B) by using the press to test
RB facility on each caption.

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NOTE: Careful observation may be necessary to ascertain that both filaments in each module are lit. Renew filaments if necessary.

SWITCH R LOCATION R	ASSOCIATED CAPTION AND WARNING LAMP LOCATION/ TITLE	PANEL
LH switch panel 12-211	LH dash panel	2-211
	LH glareshield	3-211
	LH forward racking shelf	4-215
	RH forward racking shelf	4-216
Centre console, rear panel 9-211	Centre dash panel	6-211
	Centre console, rear panel	9-211
RH switch panel 5-212	RH dash panel	2-212
	RH glareshield	3-212
	LH forward racking shelf	4-215
	RH forward racking shelf	4-216
Roof, rear switch panel 4-211	THROTTLE MASTER switch toggles (4)	4-211
	LIGHTS EMERG switch toggle	4-211
	WING & INTAKE ANTI-ICING INT 1 + 2, 3 + 4 and CYCLIC captions (4)	4-211
	ICE detector captions (3)	4-211
	FIRE FLAPS caption	4-211
	Windshield, visor and	4-211

SWITCH LOCATION	ASSOCIATED CAPTION AND WARNING LAMP LOCATION/ TITLE	PANEL
	DV window O/HEAT captions (6)	
	ADS/ENGINE PROBE HEATERS captions (15)	4-211
	Drain MAST 1, MAST 2 and MAST 3 captions (3)	4-211
	ENGINE ANTI-ICING IGV PRESS captions (4)	4-211
	Landing/taxi lights EXTENDED caption	4-211
	Main landing lights EXTENDED caption	4-211
Brake panel 12-214	Pressurization and main power panel, upper	1-214
	Main power panel, centre NOTE: After SB 33-026, the TCA/Fuel Temp. warning lights are not included in the test circuit.	4-214
	De-icing indication	8-214
	Wheel overheat indication	8-214
	Intake test system	8-214
	Intake control lane failure	8-214
	Brake panel	12-214
	EPU control panel	14-214
	Engine starting panel	18-214

R R SWITCH LOCATION	ASSOCIATED CAPTION AND WARNING LAMP LOCATION/ TITLE	PANEL
	Fire loop panel	21-214
	Door warning panel	25-214
	Engine vibration indicator panel	2-216
Electrical services panel, lower 6-214	Cabin temperature/air bleed and fuel panel	2-214
	Fuel panel, lower	5-214
	Electrical services panel, upper	3-214
	Electrical services panel, lower	6-214
	Oxygen panel	7-214
	ADS test panel	15-214
	Fire bottle test panel	28-214

Filament Test Data
Table 501

C. Conclusion

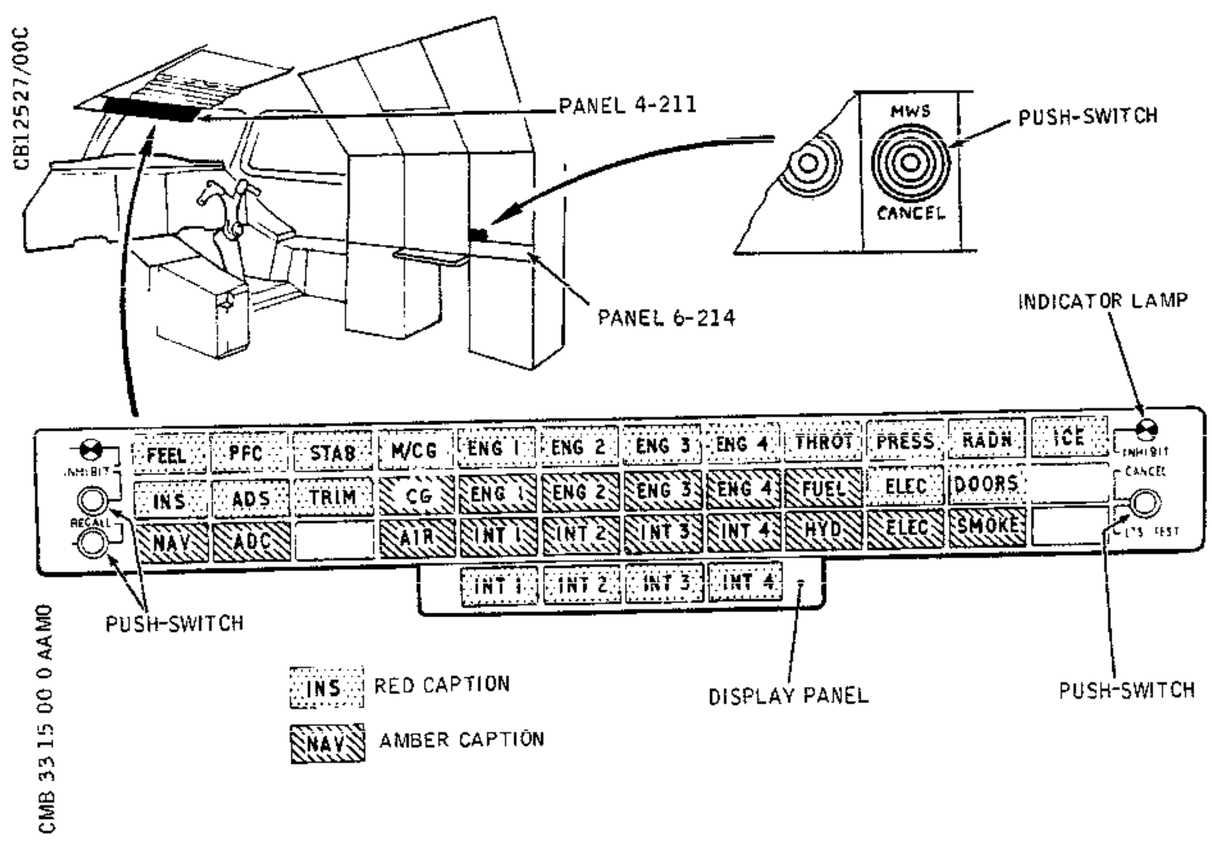
(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

MASTER WARNING SYSTEM - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

The master warning system forms part of a flight compartment warning concept which also includes an audio warning system (Ref. 31-23-00) and visual local system failure warnings which are described in the appropriate system chapters.

The local system failure warnings are classified by degree of importance which is indicated by the colour of the visual indication used:



Controls and Indicators
Figure 001

(1) Class 1: Red warnings: indicate a condition which must be brought to the immediate attention of the crew. These warnings generally require immediate remedial action.

(2) Class 2: Amber warnings: indicate a condition which must be brought to the immediate

attention of the crew, but immediate remedial action is not generally required.

(3) Class 3: Yellow, green, white and blue warnings: indicate a condition which requires monitoring only.

Of these warnings only certain class 1 and 2 warnings are associated with the master warning system (Ref. Tables 1 and 2 respectively). In general, the failures associated with the master warning system are indicated by a distinctive sound accompanied by simultaneous illumination of a failure caption on a centralized warning display, and a local warning light or caption on the appropriate systems panel.

The master warning system comprises a control unit and a display panel. The control unit accepts the various system failure input signals and processes them to produce output signals suitable -

(1) for controlling individual caption lamps on the display panel, and

(2) for initiating the sounding of a single stroke gong by the audio warning system.

In addition, output signals to a flight data recording (FDR) system (Ref. 31-31-00) are provided on receipt of certain failure warning signals (Ref. Table 3).

The single stroke gong draws attention to the display panel, which enables rapid identification of the system producing the warning. The precise cause of the warning is then determined by reference to the local system warning indications.

Each caption on the display panel can indicate more than one failure from the associated system, provided that the first failure indication and each successive failure indication is cancelled by depressing the face of the caption. Failure inputs applied to a caption that has not been cancelled are indicated by the sounding of the single stroke gong.

Provided that the failure condition(s) still exist, cancelled warnings can be reinstated by a recall facility on the display panel; the audio warnings are not repeated when this facility is used.

In addition, certain red and all amber master warning

captions and the associated audible warnings can be inhibited by an inhibit facility on the display panel; two amber indicator lamps on the display panel are illuminated to indicate this condition.

R The TRIM and ADS captions (for incidence comparison warning
R only) are inhibited when the aircraft speed exceeds 60 knots during the take-off run.

A filament test and a cancel facility, which cancels all illuminated captions, is provided on the display panel to facilitate maintenance procedures.

Each associated system warning circuit has a test facility which provides a master warning test input. This input is applied to the control unit to check the operation of the appropriate warning caption and the accompanying audio warning.

A master warning cancel facility is provided at the third crew member's station to enable all illuminated master warning captions to be cancelled simultaneously to facilitate pre-flight check procedures.

Provision is made at four test connectors, mounted near the control unit on shelf 7-216 (Ref. Fig. 002), for the connection of a test set to facilitate system testing.

2. Display Panel (Ref. Fig. 001)

The master warning display panel is mounted on the forward end of the pilots' roof panel (4-211) facing the pilots.

The failure captions are mounted on the front face. Each failure caption assembly comprises an integral switch, two filaments and an engraved filter coloured red or amber to indicate the classification of the warning. Access to the filaments is gained by hinging open the caption face.

The integral switch enables each caption to be cancelled separately by depressing the caption face.

Three push-switches and two amber indicator lamps are also mounted on the panel front face. One push-switch, designated INHIBIT, facilitates inhibition of certain red (Ref. Table 1) and all amber failure captions on the display panel and, in addition, inhibit the sounding of the single-stroke gong associated with the health (serviceability) monitor and the intermittent horn associated with the excessive cabin altitude warning (Ref. 31-23-00). When this facility is used the two amber INHIBIT indicator lamps are lit. A dimming facility (Ref. 33-14-00) enables the two INHIBIT lamps to be dimmed.

The second push-switch, designated LTS TEST/CANCEL,

enables all filaments on the display panel to be tested simultaneously when the switch is held depressed. When the switch is released, all captions are cancelled, including those illuminated prior to the test being made.

The third push-switch, designated RECALL, allows the inhibition to be removed from the failure captions, and/or all cancelled captions to be reinstated, provided that the failure condition has not been cleared.

The display panel engravings associated with the inhibit indicator lamps and the three push-switches are illuminated by integral 'Beta lights' contained within the panel.

Electrical connections to the display panel are made via two connectors mounted on the rear of the panel.

3. Control Unit (Ref. Fig. 002)

The control unit is housed in a 1/2 ATR short case and mounted on shelf 7-216 in the flight compartment right-hand equipment racking. Two Camloc handles, mounted on the front of the case, facilitate fitment of the unit.

The control unit accepts and monitors input lines from the applicable systems throughout the aircraft. These lines are segregated into four sections, each section being processed separately, thus ensuring that interference between lines of different sections cannot occur. Within each section warning inputs are grouped by system to enable one or more failures from a particular system to illuminate a common failure caption on the display panel. This grouping arrangement is detailed in Tables 1 and 2.

The control unit performs the following basic operations:

(1) Standardizes the various inputs.

(2) Rejects electrical transients which could cause false warning indications.

(3) OR-gates signals received from the same system.

(4) Provides control signals for the display panel failure captions.

(5) Implements -

(a) the inhibition of the audible warnings,

(b) the cancel facility, and

(c) the recall facility.

(6) Provides, when applicable, an output signal to the FDR system.

(7) Provides, when applicable, four separate external drive outputs, one to each engine shut-down hand warning caption.

(8) Provides two separate outputs to a system health (serviceability) monitor for detection and indication of total failure of the master warning system.

Three indicator lamps, PS1, PS2 and CLOCK, are mounted on the front panel. Normally lit, lamps PS1 and PS2 indicate the serviceability of two separate power supplies and the CLOCK lamp indicates the serviceability of both separate clock circuits, all within the control unit.

Provided that one power supply and one clock circuit is maintained the control unit remains fully operational.

4. Operation

A. Control and Indication

The master warning controls and indicator are contained on the overhead display panel. Additional monitoring lamps are contained on the control unit, and the pre-flight check cancel control is located at the 3CM station.

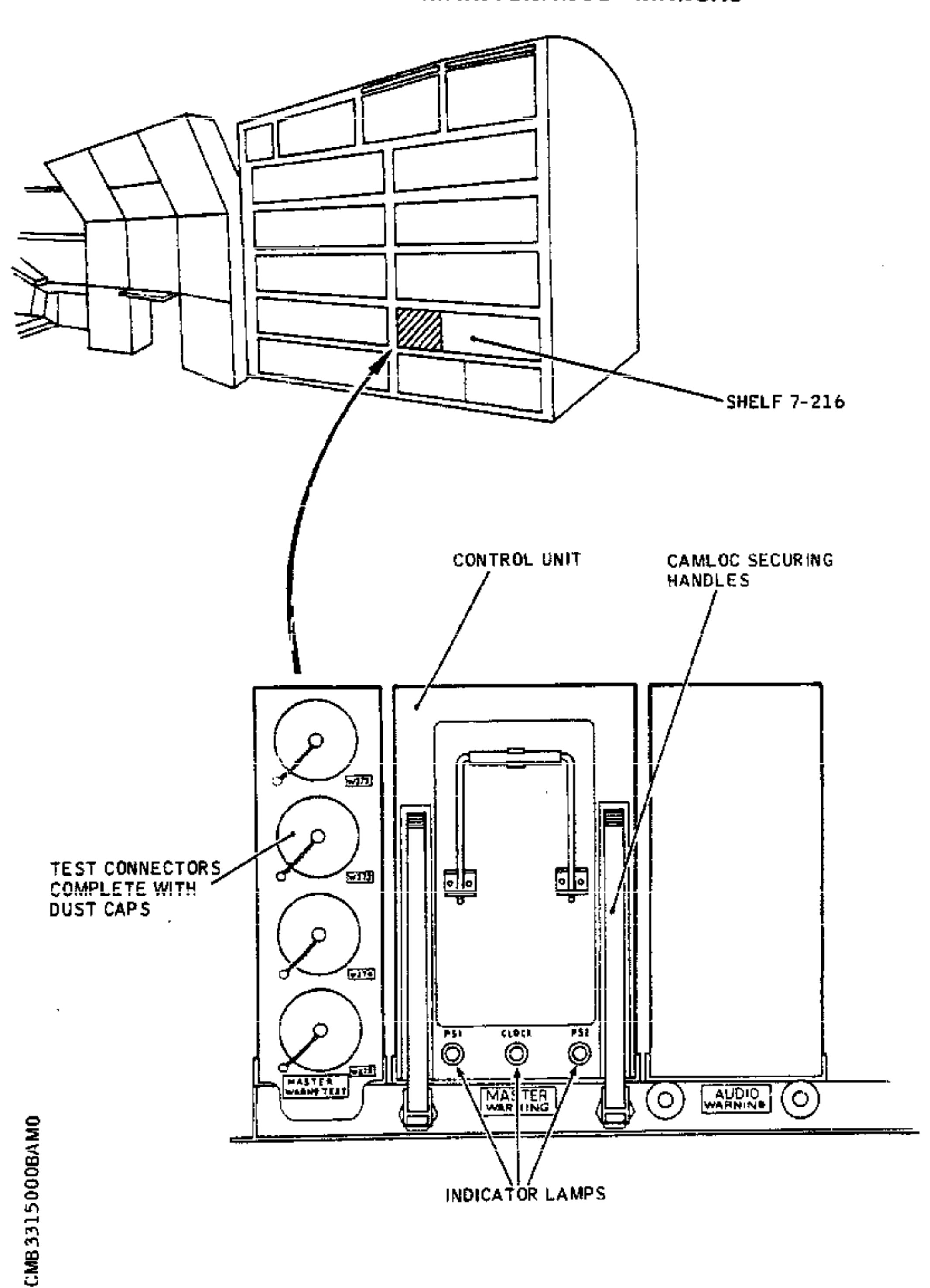
Each master warning caption and the related system warning are detailed in Tables 1 and 2, and associated FDR inputs are shown in Table 3. The display panel controls, the control unit monitoring lamps and the pre-flight check cancel control are summarized as follows:

(1) LTS TEST/CANCEL push-switch.

This switch is used to test the serviceability of all the filaments in the display panel and to cancel all warning captions illuminated prior to commencement of the test.

(2) INHIBIT push-switch.

This switch is used to inhibit certain red captions



Location of Equipment
Figure 002

(Ref. Table 1) and all amber captions.

(3) INHIBIT warning lamps.

Two inhibit warning lamps are used to indicate that the operation of certain red and all amber warning captions is inhibited.

(4) RECALL push-switch.

This switch is used to remove the inhibition imposed by operation of the inhibit facility, and to reinstate all inhibited or cancelled warning captions that have a fault signal applied when the recall facility is implemented.

(5) PS1 and PS2 monitor lamps.

These lamps are normally lit and are used to indicate a failure of either or both power supplies in the control unit. A fault is indicated by a lamp being extinguished.

(6) CLOCK monitor lamp.

This lamp is normally lit and is used to indicate a failure of one of the two clock circuits in the control unit. A fault is indicated by the lamp being extinguished.

(7) MWS CANCEL push-switch.

This switch is used to cancel all master warnings displayed on the display panel as required during the pre-flight check procedures.

R B. MWS-TRIM and MWS-ADS Inhibition

R (1) Following application of MWS INHIBIT, the MWS TRIM and ADS
R captions are inhibited for incidence comparison failures and
R TRIM (1 and 2) disconnects which occur during the take-off
R run at airspeeds greater than 60 knots.

R TRIM warnings are reinstated by application of MWS RECALL.

R ADS warnings are reinstated at 'weight off wheels'.

DISPLAY PANEL CAPTION (RED)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
* Denotes subject to inhibit facility			
*FEEL	Failure of artificial feel channels 1 or 2 in roll, pitch or yaw	Switch(es) at OFF position	4-211
PFC	Main jack low pressure (green)	GREEN L/PRESS caption	4-211
	Main jack low pressure (blue)	BLUE L/PRESS caption	4-211
	Main jack spool valve seizure (green)	GREEN FAIL caption (servo controls panel)	4-211
	Main jack spool valve seizure (blue)	Blue FAIL caption (servo controls panel)	4-211
	Relay jack spool valve seizure (green)	GREEN FAIL caption (relay jacks panel)	4-211
	Relay jack spool valve seizure (blue)	BLUE FAIL caption (relay jacks panel)	4-211
	Green inverter failed	FAIL caption	4-211
	Blue inverter failed	FAIL caption	4-211

DISPLAY PANEL CAPTION (RED)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
	Mechanical jam	MECH JAM caption	2-212
	Change of mode	Red light on flight controls indicator	2-212
R	Inner elevon desynchronized	INNER ELEV caption	2-216
R *STAB	Auto-stabilizer total failure in any one axis, roll, pitch or yaw	Switches at OFF position	4-211
*M/CG	Mach/c.g. warning	-	-
ENG 1, ENG 2, ENG 3 and ENG 4	Engine and gearbox oil low pressure	Red light on engine oil low pressure indicator	4-214
	Engine overheat	ENGINE O/HEAT caption	1-214
	Engine front bearing vibration high	Red light on engine vibration indicator	4-214
	Engine turbine cooling air (TCA) overheat	ENGINE O/HEAT caption	1-214
	Engine fire	Red light on engine shut-down handle	4-211
	Fuel leak over No.1, 2, 3 or 4 engine	LEAK caption	5-214

DISPLAY PANEL CAPTION (RED)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
*THROT	No.1, 2, 3 or 4 throttle failure or throttles selected OFF with HP cocks selected ON	THROT caption	9-211
*PRESS	Cabin overpressure or cabin altitude excessive	O/PRESS caption; EXCESS ALT caption	1-214
*RAD'N	Radiation level high	Red light on radiation indicator	19-214
*ICE	Ice detected, de-icing selected OFF	ICE caption	4-211
*INS	Failure of inertial navigation system (INS) 1, 2 or 3	WARN caption on INS display	7-211
	Loss of INS information to the auto-flight control system	INS 1, INS 2 or INS 3 caption	2-211
ADS	Discrepancy between the outputs of the ADC comparators	-	-
TRIM	Failure of both Nos.1 and 2 electrical trim channels	Switches at OFF position	4-211

	DISPLAY PANEL CAPTION (RED)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
R	*ELEC	D.c. essential busbar failure	DC ESS BUS caption	6-214
		A.c. essential busbar failure	AC ESS BUS caption	6-214
		Emergency generator overheat	O/HEAT caption	6-214
	*DOORS	Unlocked door, escape hatch or access hatch	FRONT LEFT, FRONT RIGHT, UPPER CARGO, CENTRE LEFT, CENTRE RIGHT, MISC HATCHES, REAR LEFT, REAR RIGHT or LOWER CARGO caption	25-214
R	*INT 1, INT 2, INT 3, or INT 4	Intake automatic control failure or intake on test	INT caption	Intake auto control panel

Class 1 Master Warnings (Red)
Table 1

DISPLAY PANEL CAPTION (AMBER)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
C/G	CG channel failed	CG channel caption	5-214
ENG 1, ENG 2 ENG 3 or ENG 4	Engine fire detection loop failure	FIRE SENSOR caption No.1, 2, 3 or 4	21-214
	Engine oil overheat	Amber light on oil temperature indicator	4-214
	Engine fuel temperature high	Amber light on fuel temperature indicator	4-214
	Nacelle/wing overheat	NAC/WING O/HEAT caption	1-214
	Engine fuel filter blockage	FUEL FILTER caption	1=214
	Rear bearing vibration high	Amber light on engine vibration indicator	4-214
**ON A/C ALL ENG 1, ENG 2 ENG 3 or ENG 4	Torch flame detected	-	-
**ON A/C ALL			
FUEL	Low level in No.1, 2, 3 or 4 collector tank	LOW LEVEL caption	5-214
	Low fuel pressure No.1, 2, 3 or 4 engine	LOW PRESS caption	5-214

DISPLAY PANEL CAPTION (AMBER)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
	Tank pressurization failed	TANK PRESS caption	15-214
NAV	Failure of inertial information: No.1, 2 or 3	-	-
ADC	No.1 ADC failed	ADS 1 caption	15-214
	No.2 ADC failed	ADS 2 caption	15-214
AIR	Forward equipment bay flow failed	FLOW caption	2-214
	Rear equipment bay flow failed	FLOW caption	2-214
	Air conditioning failed: No.1, 2, 3, or 4	-	-
	Air conditioning overheat: No.1, 2, 3 or 4	-	-
INT 1, INT 2 INT 3 and INT 4	N1 failed	N1 SIG caption)	Intake auto control panel
	Incidence failed	Alpha (symbol) FAIL) caption)	Intake auto control panel
	Lane failed	LANE caption)	Intake auto control panel

DISPLAY PANEL CAPTION (AMBER)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
	Hydraulics failed	HYD caption)))	
	Auto N1 reduce failed	Amber light on N1 indicator	6-211
HYD	Pump pressure: Green No.1 or 2 Blue No.3 or 4 Yellow No.2 or 4	PRESS caption	3-214
	Tank low level: Green, Blue or Yellow	L/LEVEL caption	
	Tank overheat: Green (No.1) Blue (No.2) or Yellow (No.3)	O/HEAT caption	3-214
ELEC	No.1, 2, 3 or 4 a.c. main busbar failure	AC MAIN BUS caption	3-214
	No.1, 2, 3 or 4 CSD failure	CSD 1, 2, 3 or 4 caption	3-214
	No.1, 2, 3 or 4 generator failure	GEN 1, 2, 3 or 4 caption	3-214
	DC main busbar failure	DC MAIN BUS caption	6-214
	No.1 or 2 battery isolated	BATT ISOLATE caption	6-214

DISPLAY PANEL CAPTION (AMBER)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
SMOKE	Smoke detected in:		
	Forward left electronic rack	Smoke A caption	28-214
	Forward pressurization valve	Smoke B caption	28-214
	Underfloor freight hold	Smoke C caption	28-214
	Aft left electronic rack	Smoke D caption	28-214
	Aft pressurization valve	Smoke E caption	28-214
	Aft right electronic rack	Smoke F caption	28-214
	Above floor hold	Smoke G caption	28-214
	Underfloor right electronic rack	Smoke H caption	28-214
	Forward right electronic rack	Smoke J caption	28-214
	Underfloor left electronic rack	Smoke K caption	28-214

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DISPLAY PANEL CAPTION (AMBER)	WARNING DESCRIPTION	LOCAL SYSTEM INDICATION	SYSTEM WARNING LOCATION
	No.1, 2, 3 or 4 air conditioning generation main supply duct	Smoke 1, 2 3 or 4 caption	28-214

Class 2 Master Warnings (Amber)
Table 2

MASTER WARNING INDICATION	INPUT SIGNAL TO FDR SYSTEM
ENG 1 (Red) 4 input ENG 2 (Red) 'OR gate' ENG 3 (Red) provides ENG 4 (Red) single output INT 1 (Red) 4 input INT 2 (Red) 'OR gate' INT 3 (Red) provides INT 4 (Red) single output PFC (Red) THROT (Red) TRIM (Red) STAB (Red) FEEL (Red	On application of a master warning signal to any of these captions an 'input status' (system state) signal is applied to the FDR System. These signals are present whenever a fault warning input is applied to the master warning system and are unaffected by the inhibit or cancel facilities.
ICE (Red) ADS (Red) ELEC (Red) PRESS (Red) INS (Red) R DOORS (Red) R ENG 1 (Red) R ENG 2 (Red) R ENG 3 (Red) R ENG 4 (Red) SMOKE (Amber) R ENG 1 (Amber) R ENG 2 (Amber) R ENG 3 (Amber) R ENG 4 (Amber)	When illuminated an 'output status' (displayed caption state) signal is applied to the FDR system. These signals are representative of the display panel caption state.

FDR Input Signals
Table 3

B. Functional Description (Ref. Fig.003 and 004)

The warning inputs from the related systems are divided into four groups and routed via four connectors to four separate groups of input gating boards in the control unit.

Each input has two signal states, clear or fault, representing the condition of the parameter being monitored. A fault signal must be present for not less than 750 ms in order to overcome a clock-controlled noise rejection delay. This delay eliminates the possibility of false warnings resulting from transients.

The input signals are filtered and conditioned to a standard suitable for wire OR gating with other signals from the same aircraft system, and for interfacing with a caption lamp drive circuit.

Signal conditioning of each input signal is accomplished by a RC filter followed by a clock controlled digital filter. The digital filter produces two outputs referred to as the 'pulse output' and the 'switch output' respectively.

The switch output produces a continuous positive voltage level for the duration of the fault warning.

The pulse output is a momentary positive signal in the form of a 250 ms pulse which has a leading edge coincident with the leading edge of the switch output, and is only produced when the switch output goes positive.

The two outputs from each digital filter associated with a particular aircraft system are interconnected to form two separate 'wired OR gates', one for the switch outputs and one for the pulse outputs. The resulting output from both OR gates is then applied to a caption lamp drive circuit. In addition -

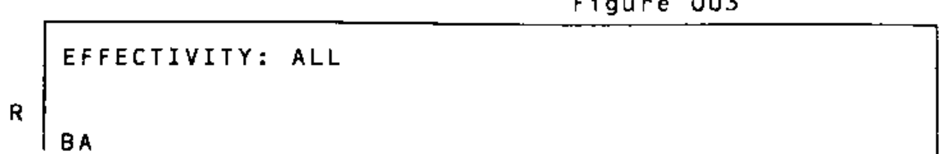
(a) the switch output of systems associated with the FDR system is applied to an input status buffer which, in turn, provides an 'input status' signal to the FDR system,

(b) the pulse outputs of all red master warnings are applied to an audio warning pulse generator circuit and, provided that the input is not inhibited, a signal is applied to the audio warning system to

CMB3315000CAM0

CONTROL UNIT
DISPLAY PANEL
TYPICAL MASTER WARNING INPUTS
CANCEL
A C ISOLATOR
MWS CANCEL
INPUTS FROM ASSOCIATED DIGITAL FILTERS
+20 V CLOCK
CANCEL RECALL
AUDIO WARNING INPUT PULSE
TEST
NEGATIVE 'ON' INPUT
FOR OUTPUT STATUS
28 V
POSITIVE 'OFF' INPUT
28 V
POSITIVE 'ON' INPUT
(REF FIG 4)
FOR INPUT STATUS
13 V NEG
13 V POS
13 V NEG
AND GATE
R RADN R
R INS R
R ENG I R
R STAB R
AUDIO WARNING INPUT PULSE
NON-INHIBITED
INHIBITED
AUDIO WARNING PULSE GENERATOR
AUDIO WARNING PULSE GENERATOR
AUDIO WARNING (REF CHAP 31-23-00)
LTS TEST/CANCEL
INHIBIT
INHIBIT
'B' ESS. DC BUSBAR
FILTER
POWER SUPPLY No 1
PS1
MONITOR
INHIBIT CLAMP
28 V DC
CLOCK A
CLOCK
MONITOR
SIGNALS TO FDR
INPUT STATUS BUFFER
OUTPUT STATUS BUFFER
FOR OUTPUTS (REF TABLE 3)
PS2
CLOCK B
MONITOR
RECALL
'A' ESS. DC BUSBAR
FILTER
POWER SUPPLY No 2
RECALL
RECALL PULSE CIRCUIT
28 V DC
RL1

\- Typical Master Warning Control Circuits -
Simplified Schematic
Figure 003


EFFECTIVITY: ALL

R BA

CMB3315000DAM0

POSITIVE 'ON' INPUTS

SWITCH OPEN = CLEAR
CLOSED = FAULT

INPUT SIGNAL CONDITIONING CIRCUIT

WIRED 'OR' GATE

CLOCK
Ø1 Ø2

28 V DC

RC FILTER

DIGITAL FILTER

PULSE OUTPUT

SWITCH OUTPUT

+20 V

0V

ENGINE AND GEARBOX LOW OIL PRESSURE

ENGINE OVERHEAT

ENGINE FRONT BEARING VIBRATION HIGH

ENGINE TCA OVERHEAT

ENGINE FIRE

FUEL LEAK OVER ENGINE

CAPTION LAMP DRIVE CIRCUIT

(REF FIG 3) R ENG 1 R

RECALL

AUDIO WARNING NON-INHIBITED INPUT PULSE

PULSE OUTPUT

SCR

0V

SWITCH ELEMENT A

ACCIDENT RECORDER INPUT STATUS

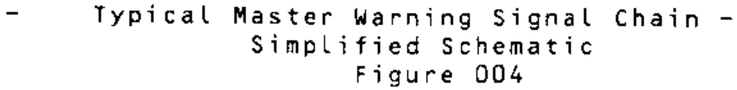
SWITCH OUTPUT

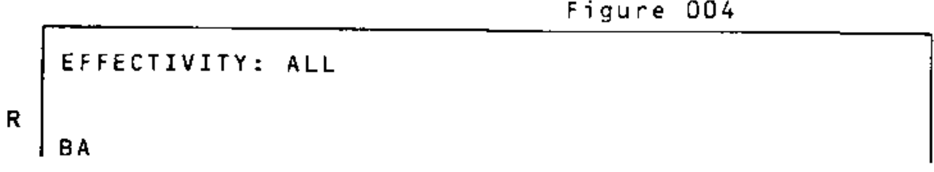
AC ISOLATOR

MWS CANCEL FACILITY

0V

SWITCH ELEMENT B


- Typical Master Warning Signal Chain -
Simplified Schematic
Figure 004


EFFECTIVITY: ALL

R BA

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sound a repetitive (one stroke per 10 s) single-stroke gong,

(c) the pulse outputs of all amber master warnings are applied to an associated audio warning pulse generator circuit and, provided that the input is not inhibited, a signal is applied to the audio warning system to sound the single-stroke gong, and

(d) the pulsed and switched outputs of engine RED inputs are applied to an external drive circuit that provides a steady state output to an associated engine shut-down handle warning caption.

Each caption lamp drive circuit is associated with a particular caption on the display panel and when switched on completes the 0 V return circuit for the caption lamp load.

The drive circuit contains two switch elements referred to as A and B respectively, and both must assume the 'on' state before the 0 V return circuit to the related caption is completed. Switch element B is controlled by the switch output OR gate and assumes the 'on' condition whenever the switch output is present, i.e., for the duration of the fault conditions. Switch element A is controlled by the pulse output OR gate and assumes the 'on' state for a duration of 250 ms whenever the switch output goes to the positive state, i.e., on initial receipt of the fault input. During this time switch element A applies a signal to the trigger of a silicon-controlled rectifier (SCR) in the 0 V return line of the caption lamp load. Provided that the caption lamp load circuit is otherwise complete, this signal switches the SCR to the conducting state and the SCR is then 'latched on' by the current flow in the circuit, and the associated caption is illuminated. The caption will then remain illuminated until the fault condition is cleared, the caption lamp load circuit is interrupted or the MWS CANCEL facility is used.

In addition, completion of the caption load circuit of certain systems associated with the FDR system also applies a signal to an output status buffer which, in turn, provides an 'output status' signal to the FDR system.

When the fault has been indicated on the display panel it is desirable to cancel the caption by depressing the caption face. Cancelling a caption leaves it free to indicate further warnings from the same aircraft system.

If however the caption is not cancelled, every additional fault produces warning inputs to the OR gate and the pulse switch output initiates operation of the audio warning only.

Captions cancelled by the caption press-to-cancel facility or the MWS CANCEL switch can be reinstated, provided that the originating fault has not cleared, by using the recall facility. When the RECALL push-switch is pressed a recall pulse circuit in the control panel applies a pulse input to switch element A in the caption lamp drive circuit. This pulse causes the switch element to assume the 'on' state and a signal is applied to the trigger of the SCR. As switch element B is already in the 'on' state (fault signal present) the SCR is latched on and the caption is re-illuminated, but the audio warning is not given.

When the inhibit facility is used the INHIBIT push-switch is pressed and a circuit is completed to -

(a) illuminate both INHIBIT amber indicating lamps, and

(b) energize relay RL1.

Energization of relay RL1 -

(a) completes a latching circuit, via the RECALL push-switch, to maintain the relay energized,

(b) removes the 28 V d.c. positive supply from those captions affected by the inhibit facility, and

(c) applies an inhibit clamp signal to the 'inhibited' audio warning signals in the control unit.

In this condition only uninhibited captions and uninhibited audio warnings can effect warnings.

The inhibition is removed by pressing the RECALL push-switch. This action unlatches relay RL1 which, in turn, extinguishes the INHIBIT indicator lamps, removes the inhibit clamp from the audio warning signal inputs and reinstates the 28 V d.c. supply to the inhibited captions. In addition, a recall pulse is applied to switch element A in the control unit and any caption lamp drive circuit that is armed by a fault input, i.e., switch element B in the 'on' state, is latched on and the appropriate caption is illuminated.

When the LTS TEST/CANCEL push-switch is depressed all

serviceable filaments on the display panel are lit and all master warnings to the display panel are cancelled. In the operated position the push-switch -

(a) completes a test circuit to each filament, and

(b) clamps all the caption lamp drive circuits to 0V. This action causes any operating SCR to cease conducting, thus removing the master warning signal from the appropriate caption.

When the switch is released all master warning captions are extinguished; if the inhibit facility was in use prior to the test the inhibit captions will remain illuminated. Use of the recall facility enables all warnings cancelled during this test to be reinstated, provided that the fault condition has not cleared.

When the MWS cancel push-switch is depressed a 0V input is applied to an a.c. isolator in the control unit. A single pulse output is produced by the isolator to momentarily clamp the switch input to each switch element B at OV, thus causing each conducting switch element to be switched off, the caption lamp drive circuit to be interrupted and all illuminated master-warning captions to be extinguished. The a.c. isolator prevents permanent application of the MWS cancel signal from affecting the system, i.e., the change of state to OV and not the signal level causes the cancellation. All cancelled captions can be reinstated by use of the RECALL facility.

R MWS-TRIM and MWS-ADS Inhibition during take-off run.

R <u>MWS-TRIM Inhibition</u>

R (a) A MWS-TRIM caption can only be initiated if both
R TRIM 1 and TRIM 2 disengaged signals appear at the
R MWS 'AND' gate inputs.

(b) TRIM 2 engagement signals of -15V are taken to Logic Unit 2 (LU2) terminals 7 and 8 (these signals change to +15V on disengagement of TRIM 2), hence transistor No.2 of LU2 (LU2-TR2) will not turn ON.

(c) When MWS-INHIBIT is selected a signal of +28V is applied to Resistor No.1 of LU2 (LU2-R1). When the aircraft speed is higher than 60 knots the ground is removed from the cathode of diode No.1 of LU2 (LU2-D1) and provided LU2-TR2 has not been turned ON, transistor No.1 of LU2 (LU2-TR1) will turn ON and relay RL1A will energise and in turn energise relay RL1B.

(d) When relays RL1A and RL1B are energised, the engagement signals from TRIM 2 are replaced with a simulated "healthy" -15V signal to the MWS-TRIM "AND" gate inputs. This will maintain the MWS-TRIM "AND" gate outputs at 0 regardless of disengagement signals from TRIM 1 and TRIM 2.

(e) When the MWS is recalled the +28V signal at LU2-R1 will disappear, LU2-TR1 and relays RL1A and RL1B will de-energise and TRIM 2 engagement signal lines will be reconnected to the MWS-TRIM "AND" gate inputs. A MWS-TRIM warning will be given if both TRIM 1 and TRIM 2 are disengaged.

(f) If before relays RL1A and RL1B are energised, TRIM 2 is disengaged, a +15V signal will appear at terminals 7 and 8 of LU2 and will turn ON LU2-TR2. This will prevent LU2-TR1 from turning ON and relays RL1A and RL1B from energising. A MWS-TRIM warning will then be given if TRIM 1 is disengaged and will not be inhibited when the aircraft has accelerated past 60 knots.

MWS-ADS Inhibition

The MWS-ADS inhibition circuit operates relay RL2 using Logic Unit No.3 (LU3) similar to that used in the MWS-TRIM inhibition circuit.

(a) The +28V signal to terminal 4 of LU3 is supplied via the undercarriage weight switch relay.

(b) The LU3 common ground connection is via relay RL1B and hence LU3 will only be operative if MWS-TRIM inhibited.

(c) If the MWS-TRIM circuit is in the inhibit state, the "healthy" +28V incidence comparator signal to TRIM 2 will turn transistor No.2 of LU3 (LU3-TR2) ON and hence maintain the base of transistor No.1 of LU3 (LU3-TR1) at ground and relay RL2 will remain de-energised.

(d) If the incidence comparator detects a discrepancy, the incidence comparator signals to both TRIM 1 and TRIM 2 will go to the non-healthy state (0V) and both Trims will disengage. At this instant, LU3-TR2 will turn OFF and +15V TRIM 2 disengaged signal will appear at resistor No.1 of LU3 (LU3-R1). This will turn LU3-TR1 ON and relay RL2 will energise and "latch" ON. The disengaged signal is then applied via a contact on relay RL2 to simulate a "healthy" incidence signal. The Incidence comparator logic will then revert to "healthy" (+28V) and hence turn LU3-TR2 ON which will cause LU3-TR1 to turn OFF leaving relay RL2 energised via its "latched" ground.
This function cycle takes place within a few milli-seconds and although the combined signals to the MWS-ADS go "non-healthy" they will be reset to the "healthy" state well within the MWS delay period and the MWS-ADS caption will not light.

(e) When the undercarriage weight switch relays change state on aircraft rotation, the 28V excitation supply to LU3 terminal 4 will switch OFF and relay RL2 will de-energise. This will reconnect the Incidence Comparator and should there still be a discrepancy, the MWS-ADS caption will light.

(f) At no time during the above will the Hp, Vc or M comparator functions be inhibited from displaying a MWS-ADS warning.

(g) When the MWS is recalled and relays RL1A and RL1B are de-energised, LU3 will not have a "ground" return. It will therefore require a "double" fault condition to occur to cause an electrical malfunction of relay RL2.

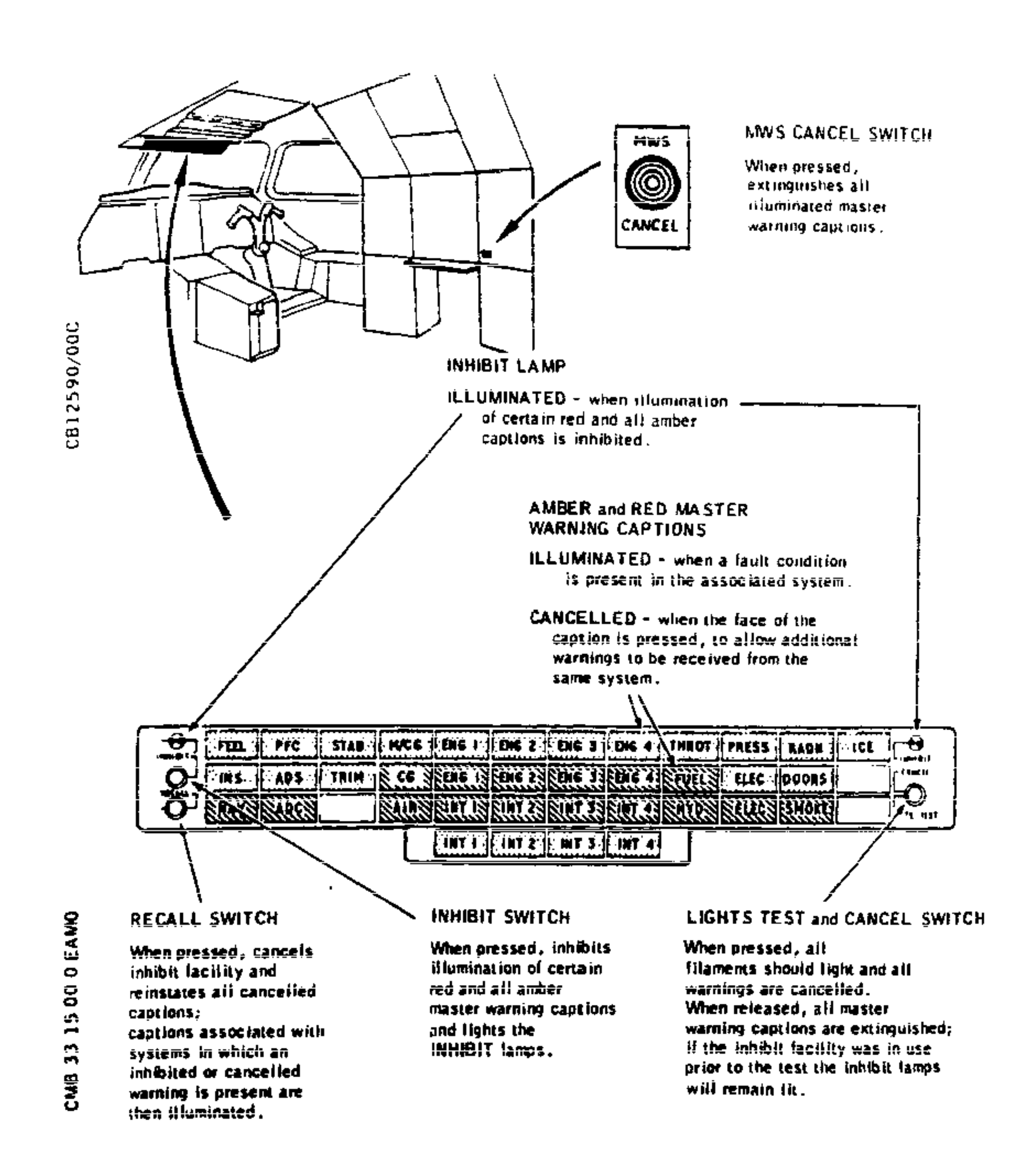
5. <u>System Management</u>

The master warning system is fully operational whenever power is available from the aircraft distribution system. Management of the system by control switches and captions on the master warning display panel, is detailed on a system management figure (Ref. Fig. 005).

Test signals can be injected into the master warning system by operating the associated system warnings which are detailed in Tables 1 and 2 and described in the related chapter or by using the master warning test set.

6. <u>Electrical Power Supplies</u>

Power supplies are provided by the 'A' and 'B' essential 28V d.c. busbars; each busbar feeds a separate power supply in the control unit. This arrangement ensures that the operation of the master warning system is unimpaired by a single power failure.



System Management
Figure 005

MASTER WARNING SYSTEM - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Ensure that the associated audio warning system (Ref. 31-23-00) is serviceable.

C. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

```
A.****************************************
  *Prepare to trouble shoot (Ref. para.2.). *
  *Check PS1, PS2 and CLOCK indicator lamps *
  *illuminated.  IF -                       *
  ****************************************
             |     |              ----------------------------------
             |     |             |1. PS1 or PS2 not illuminated -  |
             OK    NOT OK--------|   Chart 101.                    |
             |                   |2. Clock not illuminated - check |
             |                   |   filament.  If serviceable, renew|
             |                   |   MWS Control Unit (1).         |
             |                    ----------------------------------
             |
B.****************************************
  *Press-to-cancel each illuminated master  *
  *warning caption.  Check that each caption*
  *is extinguished.  IF -                   *
  ****************************************
             |     |
             |     |              ----------------------------------
             OK    NOT OK--------|Renew MWS Display Panel (2).     |
             |                    ----------------------------------
             |
C.****************************************
  *Press, and hold depressed, the LTS TEST/ *
  *CANCEL push-switch.  Check that all      *
  *filaments on the MWS display panel are   *
  *lit.  IF -                               *
  ****************************************
             |     |
             |     |              ----------------------------------
             |     |             |1. Individual filaments unlit -  |
             OK    NOT OK--------|   renew filaments.              |
             |                   |2. All MWS caption filaments     |
             |                   |   unlit - renew MWS Display     |
             |                   |   Panel (2).                    |
             |                   |3. Both INHIBIT indicator lamps  |
             |                   |   unlit - renew MWS Display Panel|
             |                   |   (2).                          |
             |                    ----------------------------------
             |
```

```
               |
D.*******************************************
  *Release the LTS TEST/CANCEL push-switch. *
  *Check that all filaments are             *
  *extinguished.   IF -                     *
  *******************************************
               |    |
               |    |           -----------------------------------
               |    |          |1. All filaments remain lit - renew|
              OK   NOT OK------|   MWS Display Panel (2).          |
               |               |2. Certain filaments remain lit -  |
               |               |   renew MWS Control Unit (1).     |
               |                -----------------------------------
               |
E.*******************************************
  *Press and release the RECALL push-switch *
  *Check that all cancelled captions are    *
  *re-illuminated.  IF -                    *
  *******************************************
               |    |
               |    |           -----------------------------------
               |    |          |MWS RECALL facility inoperative -  |
              OK   NOT OK------|Chart 102.                         |
               |                -----------------------------------
               |
F.*******************************************
  *Press the 3CM MWS CANCEL push-switch.    *
  *Check that all MWS captions are          *
  *extinguished.  IF -                      *
  *******************************************
               |    |
               |    |           -----------------------------------
               |    |          |MWS CANCEL facility at 3CM station |
              OK   NOT OK------|inoperative - Chart 103.           |
               |                -----------------------------------
               |
G.*******************************************
  *With the 3CM MWS CANCEL push-switch held *
  *depressed, press the RECALL push-switch. *
  *Check that all captions cancelled in     *
  *previous test are re-illuminated.  IF -  *
  *******************************************
               |    |
               |    |           -----------------------------------
              OK   NOT OK------|Renew MWS Control Unit (1).        |
               |                -----------------------------------
               |
```

```
                |
H.*******************************************
  *Release 3CM MWS CANCEL switch and press  *
  *the INHIBIT push-switch.  Check that the *
  *INHIBIT indicator lamps light.   IF -    *
  *******************************************
                |    |
                |    |         ------------------------------------
               OK   NOT OK------|Renew MWS Display Panel (2).       |
                |              ------------------------------------
                |
I.*******************************************
  *Press, and hold depressed, the LTS TEST/ *
  *CANCEL push-switch.  Check that only the *
  *following red captions are illuminated:  *
  *ENG 1, ENG 2, ENG 3, ENG 4, TRIM, ADS and*
  *PFC.  IF -                               *
  *******************************************
                |    |
                |    |         ------------------------------------
               OK   NOT OK------|Renew MWS Control Unit (1).        |
                |              ------------------------------------
                |
J.*******************************************
  *Press and release the WARN caption on the*
  *INS display panel (7-211) and check that *
  *the single-stroke gong audible warning is*
  *not given.  IF -                         *
  *******************************************
                |    |
                |    |         ------------------------------------
               OK   NOT OK------|Renew MWS Control Unit (1).        |
                |              ------------------------------------
                |
K.*******************************************
  *Release the LTS TEST/CANCEL push-switch, *
  *press and release the RECALL push-switch.*
  *Check that the INHIBIT lamps go out. IF -*
  *******************************************
                |    |
                |    |         ------------------------------------
               OK   NOT OK------|Renew MWS Display Panel (2).       |
                |              ------------------------------------
                |
L.*******************************************
  *Test fault inputs as detailed in System  *
  *Test (Ref. Adjustment/Test).  IF -       *
  *******************************************
                |    |
```

```
  |       |
  |       |            ---------------------------------------
  |       |           |1. Appropriate MWS caption not         |
  OK    NOT OK========|   illuminated at test positions       |
  |                   |   001 to 235 inclusive - renew MWS    |
  |                   |   Control Unit (1).                   |
  |                   |2. Single-stroke gong fails to         |
  |                   |   sound when tests 001 to 235         |
  |                   |   inclusive are selected - renew      |
  |                   |   MWS Control Unit (1).               |
  |                   |3. Appropriate MWS caption is not      |
  |                   |   extinguished when pressed-to-       |
  |                   |   cancel - renew MWS Display          |
  |                   |   Panel (2).                          |
  |                   |4. Single-stroke gong sounds when      |
  |                   |   RECALL facility is used - renew     |
  |                   |   MWS Control Unit (1).               |
  |                   |5. Appropriate MWS caption is not      |
  |                   |   re-illuminated when RECALL          |
  |                   |   facility is used - renew MWS        |
  |                   |   Control Unit (1).                   |
  |                    ---------------------------------------
  |
M.********************************************
  *If directed to the MWS Trouble Shooting   *
  *from a System Trouble-Shooting Chart, and*
  *if after carrying out the above tests the*
  *fault remains, i.e., fault signal present*
  *in associated system with MWS inactive,  *
  *perform a continuity test on the         *
  *appropriate signal input line (Ref.      *
  *Wiring Diagram Manual, 33-15-02 (red     *
  *warnings) and 33-15-03 (amber warnings)).*
  ********************************************
```

```
******************************
*PS1 or PS2 NOT ILLUMINATED.  *
******************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

```
 -----------------         -----------------        -----------------
|Ensure that CBs  |       |Remove MWS       |      |Renew CB (4) or  |
|W251 and W252 are|-------|control unit.    |-NO--|(5). Re-install  |
|set and that PS1 |       |Check that 28 V  |     |MWS control unit.|
|and PS2 filaments|       |d.c. is available|      -----------------
|are serviceable. |       |at pin 20 on rack|
 -----------------        |connectors       |
                          |W253-AB and      |
                          |W253-BB          |
                          |respectively.    |
                           -----------------
                                  |
                                 YES
                                  |
                           -----------------
                          |Renew MWS Control|
                          |Unit (1).        |
                           -----------------
```

Chart 101

MWS 'RECALL' FACILITY INOPERATIVE.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-

Press and release the RECALL push-switch.

→ Press the LTS TEST/CANCEL push-switch. Check that the cancelled captions are illuminated.

- NO → Renew MWS Display Panel (2).
- YES → Renew MWS Control Unit (1). Press and release the RECALL push-switch. If fault remains - renew MWS Display Panel (2).

Chart 102

```
******************************
*'MWS CANCEL' FACILITY AT 3CM *
*STATION INOPERATIVE.         *
******************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-

```
 ----------------      ----------------           ----------------
|Press the 3CM MWS|   |With the MWS    |         |Renew MWS CANCEL|
|CANCEL push-     |---|CANCEL push-    |--NO--|Switch (3).      |
|switch.          |   |switch held     |          ----------------
 ----------------     |depressed, check|
                      |that pin 71 of  |
                      |connector W253-BA|
                      |at the MWS      |
                      |Control Unit (1)|
                      |is at earth     |
                      |potential.      |
                       ----------------
                              |
                             YES
                              |
                       ----------------
                      |Renew MWS Control|
                      |Unit (1).        |
                       ----------------
```

Chart 103

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) MWS control unit	-	7-216	W253	RH equipment racking	33-15-11 R/I	
(2) MWS display panel	-	4-211	W254	Flight compartment roof panel	33-15-12 R/I	
(3) MWS CANCEL push-switch	-	6-214	W276	3CM station	33-15-00 R/I	
(4) Circuit breaker	-	5-213	W251	Map ref.D15	24-50-00 R/I	
(5) Circuit breaker	-	1-213	W252	Map ref.N21	24-50-00 R/I	

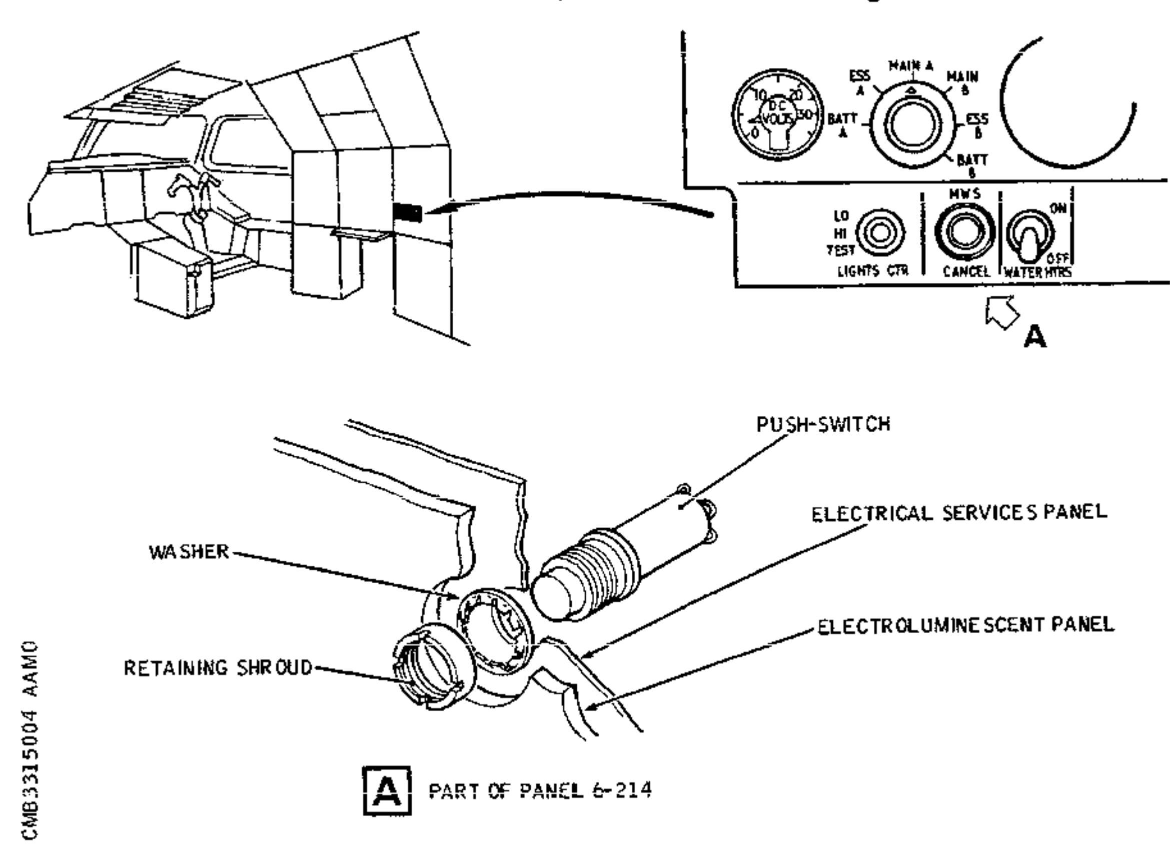
Component Identification
Table 101

MASTER WARNING SYSTEM - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

This topic contains instructions for the removal and installation of the remote master warning cancel push-switch located on the lower electrical services panel (6-214). Access to the switch is gained by lowering the appropriate section of the panel on its hinges.



- Master Warning Cancel Push-switch - Installation
Figure 401

A. Prepare

(1) Isolate the electrical generation and external power supplies as detailed in 24-00-00, Servicing.

B. Remove

(1) Release the electrical services panel retaining screws and lower the panel on its hinges.

(2) CAUTION: ENSURE THAT THE TUBULAR SPANNER DOES NOT DAMAGE THE POLISHED WALL OF THE ELECTROLUMINESCENT PANEL.

Using a suitable tubular spanner, remove the push-switch retaining shroud and locking washer. Withdraw the switch from the rear of the electrical services panel.

(3) Disconnect the electrical cables from the switch.

C. Install

(1) Comply with the electrical safety precautions.

(2) Connect the electrical cables to the push-switch, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram. Solder connections and apply heat shrink sleeves in accordance with Wiring Diagram Manual, 20-42-23 and 20-41-14.

(3) Position the switch, through the aperture, from the rear of the electrical services panel.

(4) Fit the locking washer and secure the switch with the retaining shroud.

(5) Refit the electrical services panel, taking care to avoid trapping connecting cables, and secure the panel with the retaining screws.

D. Conclusion

(1) Cancel, the safety precautions taken before removal.

(2) Check the operation of the switch by carrying out the appropriate test procedure.

R

MASTER WARNING SYSTEM - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

The following procedure details the Operational and System Tests required to prove the correct operation of the master warning system (MWS). A Functional Test is not considered necessary in this application.

Associated detailed fault indications in the related systems are dealt with in each respective system chapter.

The system provides amber and red master warning indications: each warning is accompanied by the sounding of a single-stroke gong (primary warning) by the associated audio warning system (Ref. 31-23-00); in addition, for all red warnings that are not cancelled or cleared the gong is repeated after a delay of approximately 10 s and then at 8.5 s intervals (auxiliary warning) until the fault is cleared or the warning is cancelled.

For convenience of application the Operational Test has been written as two separate procedures, as follows:-

(1) Operational Test - Master Warning System (Ref. para.2.)

This test checks the operation of the master warning system components but does not check the operation of individual master warning inputs from the associated systems.

(2) Operational Test - Selected Master Warnings (Ref. para.3.)

This test checks the operation of selected master warning inputs from associated systems. This selection includes certain warnings which are not normally tested by the flight crew during the pre-flight check procedures.

2. Operational Test - Master Warning System

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Press-to-cancel each illuminated master warning

caption on the MWS display panel.

B. Test MWS Maintenance Lamps

(1) Check that indicator lamps PS1, PS2, and CLOCK on the MWS control unit, located on panel 7-216, are lit.

C. Test MWS Display Panel Filament Test and Cancel Facility

(1) Press, and hold depressed, the LTS TEST - CANCEL push-switch on the MWS display panel. Check that all filaments in the MWS panel captions and in the INHIBIT indicating lamps are lit.

(2) Release the LTS TEST - CANCEL push-switch. Check that all filaments are extinguished.

D. Test Single-stroke Gong, and Primary and Auxiliary Audio Warnings

(1) Trip the AUDIO WARN SYS SUPPLY 1 circuit breaker W371 on panel 1-213, map ref.M21.

(2) Press-to-test one of the four AC MAIN BUS captions on panel 3-214. Check that the caption is illuminated, the MWS amber ELEC caption is illuminated and the audio warning single-stroke gong sounds immediately (primary warning); release the AC MAIN BUS caption.

(3) Hold depressed one of the four AC ESS BUS captions on panel 6-214 for approximately 30 s. During this time check that -

(a) the caption is illuminated,

(b) the primary audio warning sounds immediately the AC ESS BUS caption is depressed, and

(c) after approximately 10 s the gong sounds again and thereafter at 8.5 s intervals until the caption is released (auxiliary warning).

(4) Reset circuit breaker W371 and trip the AUDIO WARN SYS SUPPLY 2 circuit breaker W372 on panel 5-213, map ref.C17.

(5) Repeat the tests detailed in paragraphs (2) and (3).

(6) Reset circuit breaker W372.

E. Test MWS Recall Facility

(1) Press and release the RECALL push-switch on the MWS display panel and check that the warning captions cancelled in operation A.(2) are reinstated.

F. Test MWS Cancel Facility at 3CM Station

(1) Press and release the MWS CANCEL push-switch at the third crew member's (3CM) station. Check that all MWS captions are extinguished.

(2) Press and release the RECALL push-switch on the MWS display panel. Check that all captions extinguished by operation (1) are re-illuminated.

G. Test MWS Inhibit Facility

(1) Press the INHIBIT push-switch on the MWS display panel and check that the INHIBIT indicator lamps are lit.

(2) Press, and hold depressed, the LTS TEST - CANCEL push-switch. Check that only the following red captions are illuminated: ENG 1, ENG 2, ENG 3, ENG 4, TRIM, ADS and PFC.

(3) Release the LTS TEST - CANCEL push-switch and check that all captions are extinguished; INHIBIT lamps must remain lit.

(4) Press and release the RECALL push-switch. Check that the INHIBIT lights go out.

R
R
R
R
R
R
R
R
R
R
R
R
R
R
R
R
R
R
R

R
R

H. Test Cabin Altitude Audio Warning (Intermittent Horn) Inhibit

(1) Press-to-test the EXCESS ALT caption on panel 1-214. Check that the audio warning intermittent horn sounds; release the caption.

(2) Press the INHIBIT push-switch on the MWS display panel and check that the INHIBIT indicator lamps are lit.

(3) Press the EXCESS ALT caption and check that the audio warning intermittent horn does not sound; release the caption.

(4) Press and release the RECALL push-switch. Check that the INHIBIT indicator lights go out.

I. Conclusion

(1) Press and release the LTS TEST - CANCEL push-switch. Check that all captions are extinguished.

(2) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Operational Test - Selected Master Warnings

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Ensure that the throttle levers are on the rear mechanical stops.

(3) Hold the LTS TEST - CANCEL push-switch on the MWS display panel depressed. Check that all filaments in the MWS panel captions are illuminated and the INHIBIT indicating lamps are lit.

(4) Release the LTS TEST - CANCEL push-switch and check that all filaments are extinguished.

B (5) At the centre console, panel 9-211, set the Nos.1 and 2
B ADC switches to "ON".

B. Test

(1) MWS Maintenance Lamps

(a) Check that PS1, PS2 and CLOCK indicator lamps on the MWS control unit, panel 7-216, are lit.

(2) MWS 'STAB' Caption

(a) Press and release the RECALL push-switch. Check that the STAB caption is illuminated.

(b) Engage the AUTO STAB 1 PITCH, ROLL and YAW switches. Check that after a short delay the STAB caption is extinguished.

(c) Disengage the AUTO STAB 1 PITCH, ROLL and YAW switches and check that the STAB caption is illuminated, accompanied by the single-stroke gong.

(d) Press-to-cancel the LTS TEST - CANCEL push-switch. Check that the STAB caption is extinguished and the gong is cancelled.

(3) MWS 'FUEL' Caption

(a) Press the LOW PRESS caption on panel 5-214.

Check that the LOW PRESS and FUEL captions are illuminated, accompanied by the single-stroke gong.

(b) Release the LOW PRESS caption.

(c) Press-to-cancel the LTS TEST - CANCEL push-switch. Check that the FUEL caption is extinguished.

(4) MWS 'HYD' Caption

(a) Check that the L/PRESS captions, on panel 3-214, and the HYD caption are illuminated.

(b) Press-to-cancel the LTS TEST - CANCEL push-switch. Check that the HYD caption is extinguished.

(c) Press and release the RECALL push-switch. Check that the HYD caption is illuminated.

(d) Press-to-cancel the LTS TEST - CANCEL push-switch. Check that the HYD caption is extinguished.

(5) MWS M/CG Caption

(a) At the FQI control panel, panel 5-214, note the counter display and rotate the ZFCG selector knob. Check that -

a1) the digits on the % counter move,

a2) the pointers on the CG % indicators on panels 2-211 and 5-214 move FWD/AFT, and

a3) the MWS M/CG caption is illuminated, accompanied by the single-stroke gong.

(b) Press-to-cancel the LTS TEST - CANCEL push-switch. Check that the MWS M/CG caption is extinguished and the single-stroke gong is cancelled.

(c) Rotate the ZFCG selector knob to return the % counter display to the original setting.

B (d) At the centre console panel 9-211, set the
B Nos.1 and 2 ADC switches to "OFF".

(6) MWS - Inhibition of TRIM and ADS Master Warnings during take-off.

(a) Connect ADC Input Simulation Test Units to both No.1 and No.2 ADC's, OR:
Connect separate Pitot Pressure Test equipment to both No.1 and No.2 Pitot probes.

(b) Check that the MWS-ADC and MWS-ADS captions on panel 9-211 are not lit.

(c) Check that all ADC instruments show steady readings R and all failure flags are out of view.

(d) On panel 4-211, engage TRIM 1 and TRIM 2 switches and check that the MWS-TRIM caption is not lit.

(e) Set the No.1 ADC Test switch to COMP. Check that the No.1 ADC-TEST caption is lit and that the TRIM 1 and TRIM 2 switches have disengaged.
Check that the MWS-ADS and MWS-TRIM captions are lit and that the ASI-FAIL flags on Captain's and Co-pilot's dash panels are displayed.

(f) Set the No.1 ADC Test switch to NORM. Check that the MWS-TRIM caption is lit and that the No.1 ADC-TEST caption is not lit.
Check that the MWS-ADS caption is not lit and the Captain's and Co-pilot's ASI-FAIL flags are not displayed.

(g) Engage the TRIM 1 switch and check that the MWS-TRIM R caption is not lit.

(h) Engage the TRIM 2 switch. Check that both TRIM 1 and TRIM 2 switches remain engaged.

(i) Set the No.2 ADC Test switch to COMP. Check that the No.2 ADC-TEST caption is lit and that the TRIM 1 and TRIM 2 switches have disengaged.
Check that the MWS-ADS and MWS-TRIM captions are lit and the Captain's and Co-pilot's ASI-FAIL flags are displayed.

(j) Set the No.2 ADC Test switch to NORM. Check that the MWS-TRIM caption is lit and that the No.2 ADC-TEST caption is not lit.
Check that the MWS-ADS caption is not lit and the Captain's and Co-pilot's ASI-FAIL flags are not displayed.

(k) Engage TRIM 2 switch and check that the MWS-TRIM caption is not lit.

(l) Engage TRIM 1 switch and check that both TRIM 1 and TRIM 2 switches remain engaged.

(m) Drive both No.1 and No.2 ADC's to 50 knots simultaneously.

(n) Select INHIBIT on the MWS display panel and check that the MWS-INHIBIT lights are lit.

(o) Check that the MWS-ADS and MWS-TRIM captions are not lit.

(p) Disengage TRIM 1 and TRIM 2 switches and check that the MWS-TRIM caption is lit.

(q) Drive both No.1 and No.2 ADC's to 80 knots simultaneously and check that the MWS-TRIM caption remains lit.

(r) Engage TRIM 1 switch and check that the MWS-TRIM caption is not lit.

(s) Engage TRIM 2 switch and check that both TRIM 1 and TRIM 2 switches remain engaged.

(t) Drive both No.1 and No.2 ADC's to 110 knots and adjust the No.1 and No.2 Incidence sensors to indicate +3.0 on the Captain's and Co-pilot's incidence indicators.
Check that the MWS-ADS caption is not lit, re-engage TRIM 1 and TRIM 2 switches if necessary and check that the MWS-TRIM caption is not lit.

(u) Drive both No.1 and No.2 ADC's to ZERO and set the No.4 Engine N1 limiter switch to 88%.

(v) Select INHIBIT on the Master Warning System display panel and check that the MWS-INHIBIT lights are lit.

(w) Drive both No.1 and No.2 ADC's to 65 knots simultaneously and check that the No.4 Engine N1 limiter switch is off.

(x) Disengage TRIM 1 and TRIM 2 switches and check that the MWS-TRIM caption is not lit.

(y) Engage TRIM 1 and TRIM 2 switches.

R (z) Drive both No.1 and No.2 ADC's to 110 knots
R simultaneously and check that the Captain's and
R Co-pilot's incidence indicators read +3.0.

R (aa) Adjust the No.1 Incidence sensor to indicate +10
R on the Captain's Incidence indicator. Check that Trim
R 1 and TRIM 2 switches have disengaged and that the
R MWS-ADS and MWS-TRIM captions are not lit.

R (ab) Adjust the No.1 Incidence sensor to indicate +3.0 on
R the Captains Incidence indicator. Check that the
R MWS-ADS caption is not lit.

R (ac) Drive the No.2 ADC to 130 knots and check that the
R MWS-ADS caption is lit and the Captain's and Co-pilot's
R ASI-FAIL flags are displayed.

R (ad) Drive the No.1 ADC to 130 knots and check that the
R MWS-ADS caption is not lit and the Captain's and
R Co-pilot's ASI-FAIL flags are not displayed.

R (ae) Operate the undercarriage weight switches to simulate
R flight conditions and check that the MWS-ADS and
R MWS-TRIM captions are not lit.

R (af) Select RECALL on the MWS display panel and check that
R the MWS-TRIM caption is lit and the MWS-INHIBIT lights
R are not lit.

R (ag) Engage the TRIM 1 and TRIM 2 switches and check that
R the MWS-TRIM caption is not lit.

R (ah) Drive both No.1 and No.2 ADC's to ZERO and return the
R undercarriage weight switches to ground conditions.

R (ai) Select INHIBIT on the Master Warning System display
R panel and check that the MWS-INHIBIT lights are lit.

R (aj) Drive both No.1 and No.2 ADCs to 110 knots
R simultaneously.

R (ak) Adjust the No.2 Incidence sensor to indicate +10 on the
R Co-pilots Incidence indicator. Check that both TRIM 1
R and TRIM 2 switches have disengaged and that the
R MWS-ADS and MWS-TRIM captions are not lit.

R (al) Operate the undercarriage weight switches to simulate
R flight condition and check that the MWS-ADS caption is
R lit and the MWS-TRIM caption is not lit.

R (am) Select RECALL on the Master Warning System display panel and check that the MWS-ADS and the MWS-TRIM captions are lit and that the MWS-INHIBIT lights are not lit.

R (an) Return the undercarriage weight switches to ground conditions. Check that the MWS-TRIM caption and MWS-ADS caption are lit.

R (ao) Drive both No.1 and No.2 ADCs to ZERO and check that the MWS-TRIM caption is lit and the MWS-ADS caption is not lit.

R (ap) Switch off all systems, trip the necessary circuit-breakers and remove all test equipment.

R (7) Switch off and disconnect electrical ground power as detailed in 42-41-00.

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4. System Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-
Master warning system test set	TE6044

B. Prepare (Ref. Fig. 501)

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Trip and fit safety clips to the circuit breakers listed below:-

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
MWS SUP 2	5-213	W251	D15
MWS SUP 1	1-213	W252	N21
FWD RACKING TEST SKT DC SUP	15-216	M242	E22

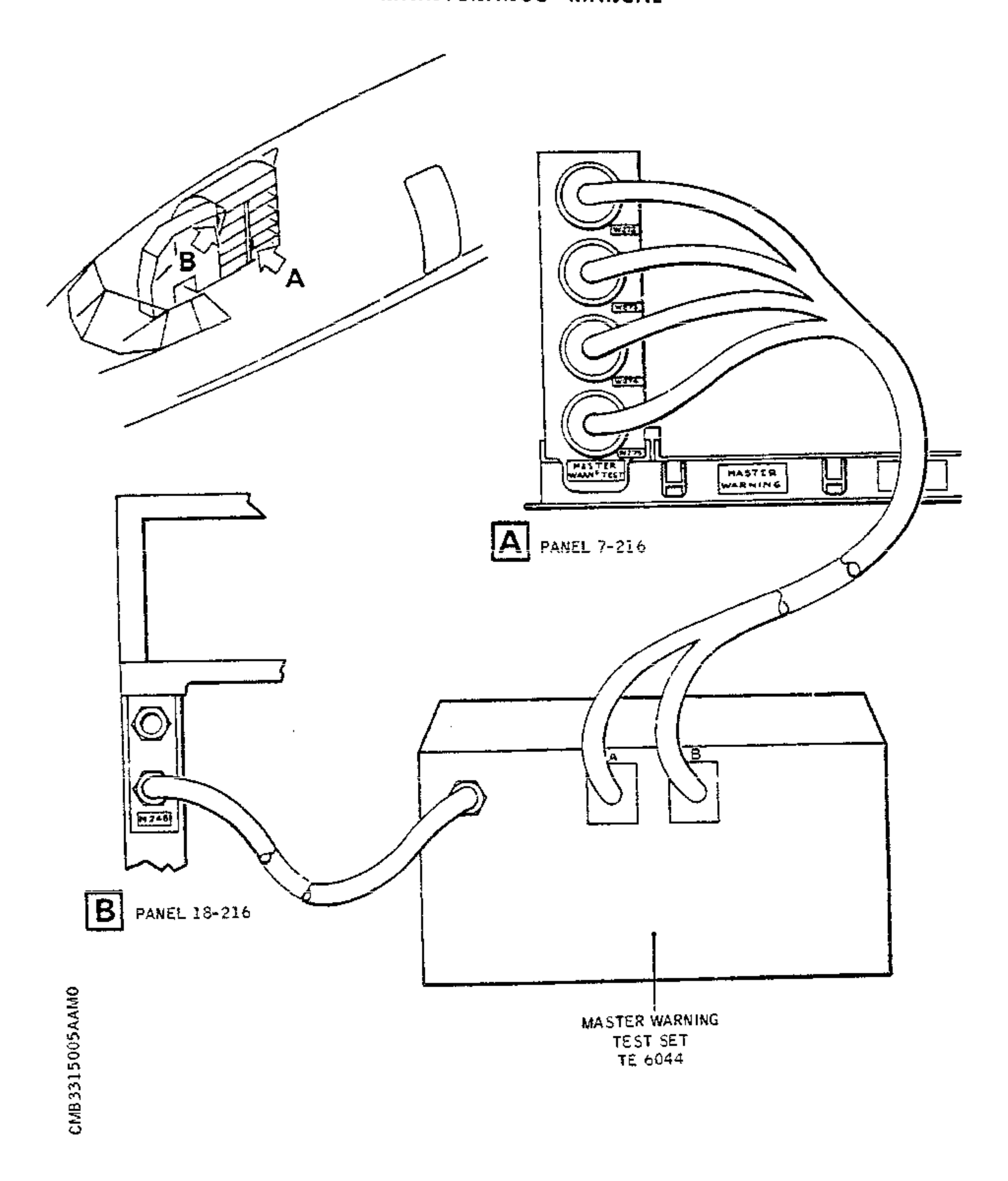
(3) Remove the protective covers from the master warning test connectors W272-A, W273-A, W274-A and W275-A on panel 7-216 and from the 28 V d.c. power supply connector M246 on panel 18-216.

(4) Connect the test set to the connectors detailed in paragraph (3).

(5) Ensure that both push-switches on the test set are in the released position and that the test selector is set to 000.

(6) Remove the safety clips and reset the circuit breakers tripped in operation (2).

(7) On the test set, press the power ON switch.



- Master Warning System Test Set TE6044 - Interconnections
Figure 501

Check that the switch is illuminated and all the captions on the MWS display panel are extinguished.

(8) Press the RECALL push-button on the MWS display panel. Check that all captions remain extinguished.

C. Test - Fault Inputs

(1) Ensure that all captions on the MWS display panel are cancelled. Refer to Table 501 and select, in turn, each individual test position numbered 001 to 236. At each test position:-

(a) Hold the EVENT push-switch depressed and check that -

a1) the associated master warning caption on the display panel is illuminated and

a2) the single-stroke gong sounds.

(b) Press-to-cancel the face of the illuminated caption. Check that the caption is extinguished.

(c) Press and release the RECALL push-switch. Check that the cancelled warning caption is re-illuminated and that the single-stroke gong does not sound.

(d) Release the EVENT push-switch and check that the appropriate master warning caption is extinguished.

NOTE: During checks 029, 030, 031, 032, 033, 036, 037, 038, 039, 040, 043, 044, 045, 046, 047, 050, 051, 052, 053 and 054 the appropriate engine shut down handle lamps are lit.

During checks 034, 041, 048 and 055 the appropriate engine shut down handle lamps are lit and the fire bell sounds.

During test 058 the audio warning cabin pressure klaxon may operate.

TEST SELECTION	CAPTION	COLOUR
001	INS	Red
002	INS	Red
003	INS	Red
004	INS	Red
005	INS	Red
006	INS	Red
007	FEEL	Red
008	FEEL	Red
009	FEEL	Red
010	FEEL	Red
011	FEEL	Red
012	FEEL	Red
013	STAB	Red
014	STAB	Red
015	STAB	Red
016	STAB	Red
017	STAB	Red
018	STAB	Red
019	PFC	Red
020	PFC	Red
021	PFC	Red
022	PFC	Red
023	PFC	Red

TEST SELECTION	CAPTION	COLOUR
024	PFC	Red
025	PFC	Red
026	PFC	Red
027	PFC	Red
028	PFC	Red
029	ENG 1	Red
030	ENG 1	Red
031	ENG 1	Red
032	ENG 1	Red
033	ENG 1	Red
034	ENG 1	Red
035	N/A	-
036	ENG 2	Red
037	ENG 2	Red
038	ENG 2	Red
039	ENG 2	Red
040	ENG 2	Red
041	ENG 2	Red
042	N/A	-
043	ENG 3	Red
044	ENG 3	Red
045	ENG 3	Red
046	ENG 3	Red
047	ENG 3	Red

TEST SELECTION	CAPTION	COLOUR
048	ENG 3	Red
049	N/A	-
050	ENG 4	Red
051	ENG 4	Red
052	ENG 4	Red
053	ENG 4	Red
054	ENG 4	Red
055	ENG 4	Red
056	N/A	-
057	RADN	Red
058	PRESS	Red
059	PRESS	Red
060	THROT	Red
061	THROT	Red
062	THROT	Red
063	THROT	Red
064	ICE	Red
065	ICE	Red
066	MC/G	Red
067	MC/G	Red
068	MC/G	Red
069	MC/G	Red
070	N/A	-
071	ADS	Red

TEST SELECTION	CAPTION	COLOUR
072	TRIM	Red
073	TRIM	Red
074	CG	Amber
075	N/A	-
076	ENG 1	Amber
077	ENG 1	Amber
078	ENG 1	Amber
079	ENG 1	Amber
080	N/A	-
081	ENG 1	Amber
082	ENG 1	Amber
083	ENG 1	Amber
084	ENG 2	Amber
085	ENG 2	Amber
086	ENG 2	Amber
087	ENG 2	Amber
088	ENG 2	Amber
089	N/A	-
090	ENG 2	Amber
091	ENG 2	Amber
092	ENG 3	Amber
093	ENG 3	Amber
094	ENG 3	Amber
095	ENG 3	Amber

TEST SELECTION	CAPTION	COLOUR
096	N/A	-
097	ENG 3	Amber
098	ENG 3	Amber
099	ENG 3	Amber
100	ENG 4	Amber
101	ENG 4	Amber
102	ENG 4	Amber
103	ENG 4	Amber
104	N/A	-
105	ENG 4	Amber
106	ENG 4	Amber
107	ENG 4	Amber
108	N/A	-
109	N/A	-
110	N/A	-
111	N/A	-
112	FUEL	Amber
113	FUEL	Amber
114	FUEL	Amber
115	FUEL	Amber
116	FUEL	Amber
117	FUEL	Amber
118	FUEL	Amber
119	FUEL	Amber

TEST SELECTION	CAPTION	COLOUR
120	FUEL	Amber
121	ELEC	Red
122	ELEC	Red
123	ELEC	Red
124	ELEC	Red
125	ELEC	Red
126	ELEC	Red
127	ELEC	Red
128	N/A	-
129	N/A	-
130	N/A	-
131	N/A	-
132	DOORS	Red
133	N/A	-
134	N/A	-
135	N/A	-
136	N/A	-
137	N/A	-
138	N/A	-
139	N/A	-
140	N/A	-
141	N/A	-
142	NAV	Amber
143	NAV	Amber

TEST SELECTION	CAPTION	COLOUR
144	NAV	Amber
145	ADC	Amber
146	ADC	Amber
147	N/A	-
148	N/A	-
149	N/A	-
150	N/A	-
151	AIR	Amber
152	AIR	Amber
153	AIR	Amber
154	AIR	Amber
155	AIR	Amber
156	AIR	Amber
157	AIR	Amber
158	AIR	Amber
159	AIR	Amber
160	AIR	Amber
161	AIR	Amber
162	INT 1	Amber
163	INT 1	Amber
164	N/A	-
165	INT 1	Amber
166	INT 1	Amber
167	INT 1	Amber

TEST SELECTION	CAPTION	COLOUR
168	INT 2	Amber
169	INT 2	Amber
170	N/A	-
171	INT 2	Amber
172	INT 2	Amber
173	INT 2	Amber
174	INT 3	Amber
175	INT 3	Amber
176	N/A	-
177	INT 3	Amber
178	INT 3	Amber
179	INT 3	Amber
180	INT 4	Amber
181	INT 4	Amber
182	N/A	-
183	INT 4	Amber
184	INT 4	Amber
185	INT 4	Amber
186	HYD	Amber
187	HYD	Amber
188	HYD	Amber
189	HYD	Amber
190	HYD	Amber
191	HYD	Amber

TEST SELECTION	CAPTION	COLOUR
192	HYD	Amber
193	HYD	Amber
194	HYD	Amber
195	HYD	Amber
196	HYD	Amber
197	HYD	Amber
198	ELEC	Amber
199	ELEC	Amber
200	ELEC	Amber
201	ELEC	Amber
202	ELEC	Amber
203	ELEC	Amber
204	ELEC	Amber
205	ELEC	Amber
206	ELEC	Amber
207	ELEC	Amber
208	ELEC	Amber
209	ELEC	Amber
210	ELEC	Amber
211	ELEC	Amber
212	ELEC	Amber
213	N/A	-
214	N/A	-
215	N/A	-

TEST SELECTION	CAPTION	COLOUR
216	N/A	-
217	SMOKE	Amber
218	SMOKE	Amber
219	SMOKE	Amber
220	SMOKE	Amber
221	SMOKE	Amber
222	SMOKE	Amber
223	SMOKE	Amber
224	SMOKE	Amber
225	SMOKE	Amber
226	SMOKE	Amber
227	SMOKE	Amber
228	SMOKE	Amber
229	SMOKE	Amber
230	SMOKE	Amber
231	INT 1	Red
232	INT 2	Red
233	INT 3	Red
234	INT 4	Red
235	INT 1, 2, 3 and 4	Red
236	PFC	Red

Individual Test Positions
Table 501

D. Test - Power Supplies

(1) Trip circuit breaker W251 on panel 5-213, map ref.D15, and check that the MWS control unit PS2 indicator lamp is extinguished.

(2) Set the TEST SELECT switch on the test position to "000". Check that all captions on the MWS display panel are extinguished.

(3) Press and hold depressed the LTS TEST - CANCEL push-switch on the MWS display panel. Check that -

(a) all filaments on the MWS panel are lit, and

(b) all filaments are extinguished when the LTS TEST - CANCEL push-switch is released.

(4) Reset circuit breaker W251 and check that lamp PS2 on the MWS control unit is illuminated.

(5) Trip circuit breaker W252 on panel 1-213, map ref.N21, and check that the MWS control unit PS1 indicator lamp is extinguished.

(6) Repeat operation (3).

(7) Reset circuit breaker W252 and check that lamp PS1 on the MWS control unit is illuminated.

E. Test - Recall and 3CM Cancel Facility

(1) Set the TEST SELECT switch on the test set to "001". Press the EVENT push-switch and hold it depressed; check that the red INS caption on the MWS display panel is illuminated and the primary and auxiliary audio warnings are given.

(2) Press and release the red INS caption and check that the caption is extinguished and the audio warning ceases.

(3) Press and release the RECALL push-switch on the MWS display panel. Check that the red INS caption is illuminated and that after a delay of approximately 10 s the auxiliary audio warning operates and continue to repeat at approximately 8.5 s intervals.

(4) Press the MWS CANCEL push-switch on panel 6-214

at the third crew member's station. Check that the red INS caption is extinguished and the auxiliary audio warning ceases.

(5) Press and release the RECALL push-switch. Check that the red INS caption is illuminated.

(6) Press and release the LTS TEST - CANCEL push-switch on the MWS display panel. Check that the red INS caption is extinguished; release the EVENT push-switch on the test set.

(7) Set the TEST SELECT switch on the test set to "000" and switch off the power supply at the test set.

(8) Disconnect and remove the test set; replace the protective covers on the MWS test connectors W272-A, W273-A, W274-A and W275-A.

F. Test - Inhibit Facility

(1) Press-to-test the EXCESS ALT caption on panel 1-214. Check that the primary and auxiliary audio warnings are given; release the caption.

(2) Press the INHIBIT push-switch on the MWS display panel and check that the INHIBIT indicator lamps are lit.

(3) Press the EXCESS ALT caption and check that the primary and auxiliary audio warnings are not given; release the caption.

(4) Press, and hold depressed, the LTS TEST - CANCEL push-switch. Check that only the following red captions are illuminated: ENG 1, ENG 2, ENG 3, ENG 4, TRIM, ADS and PFC.

(5) Release the LTS TEST - CANCEL push-switch and check that all captions are extinguished; INHIBIT lamps must remain lit.

(6) Press and release the RECALL push-switch. Check that the INHIBIT lamps go out.

**ON A/C 001-005,

After SB 33-020 For A/C 001-005,

(7) At the flying controls SERVO CONTROLS panel, check that the hydraulic selectors are in the NORMAL position.

(8) At the GROUND HYD CHECK-OUT panel, set both ON - OFF switches to "ON" and the rotary selector switch to "GREEN-BLUE".

(9) Ensure that the GREEN L PRESS caption on the flying controls SERVO CONTROLS panel (Ref. 27-34-00) is extinguished.

(10) Press the RECALL push-switch on the MWS display panel and check that the PFC caption is extinguished.

(11) At the GROUND HYD CHECK-OUT panel, set the rotary selector to "BLUE-YELLOW" and check that the GREEN L PRESS caption on the flying controls SERVO CONTROLS panel and the MWS PFC caption are illuminated, accompanied by the sounding of the single-stroke gong.

(12) At the GROUND HYD CHECK-OUT panel, set the rotary selector to "GREEN-BLUE" and check that the warnings given in operation (11) are cancelled.

(13) Press the INHIBIT push-switch at the MWS display panel and check that the INHIBIT indicator lamps are lit.

(14) At the GROUND HYD CHECK-OUT panel, set the rotary selector to "BLUE-YELLOW". Check that the GREEN L PRESS caption is illuminated and the MWS PFC caption remains extinguished.

(15) At the GROUND HYD CHECK=OUT panel, set both ON - OFF switches to "OFF".

(16) Press and release the RECALL push-switch; check that the INHIBIT indicator lamps go out.

**ON A/C 001-005,

G. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

MASTER WARNING CONTROL UNIT - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

The master warning control unit is situated in the flight compartment right-hand racking, on shelf 7-216, and is retained by two lever fasteners that engage with fork-ends on the racking.

2. Master Warning Control Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Electrically isolate the control unit by tripping the associated circuit breakers listed below. Fit a safety clip to each tripped circuit breaker.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
No.1 power supply	5-213	W251	D15
No.2 power supply	1-213	W252	N21

(2) Remove the appropriate cover from the racking and locate the control unit on shelf 7-216.

C. Remove

(1) Release the thumb catches retaining the lever fasteners on the unit and draw the levers downward, simultaneously, until the unit is free from the backplate connectors.

(2) Withdraw the unit sufficiently to clear the rack fork-ends and lock the lever fasteners back in the

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upright position with the thumb catches. Remove the unit from the rack.

D. Install

(1) Comply with the electrical safety precautions.

(2) Remove the protective blanks from the backplate connectors and ensure that all pins, inserts and mating surfaces are clean and undamaged.

(3) Place the unit on the mounting tray and align the rear connectors with the backplate connectors. Release the thumb catches retaining the lever fasteners and draw the levers downward to engage the rack fork-ends, then lock the levers back in the upright position to mate the connectors and retain the unit. Ensure that the unit is bonded in accordance with 20-27-11.

E. Conclusion

(1) Refit and secure the cover to the rack.

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) Carry out an Operational Test of the system as detailed in 33-15-00, Adjustment/Test.

MASTER WARNING DISPLAY PANEL - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS AS DETAILED IN 24-00-00.

1. General

The master warning display panel is situated at the forward end of the pilots' roof panel in the flight compartment.

2. Master Warning Display Panel

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Electrically isolate the display panel by tripping the associated circuit breakers listed below. Fit a safety clip to each tripped circuit breaker.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
No.1 power supply	5-213	W251	D15
No.2 power supply	1-213	W252	N21

(2) Remove the pilots' windscreen roof panel (Ref. 25-12-00) to gain access to the display panel.

C. Remove

(1) Support the display panel and remove the four recessed attachment bolts.

(2) Partially withdraw the display panel and disconnect the electrical connectors. Remove the display panel.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the display panel and connect the electrical connectors to the panel, ensuring that the mating surfaces are clean and undamaged.

(3) Place the display panel in position and secure it with the four attachment bolts. Ensure that the panel is bonded in accordance with 20-27-11.

E. Conclusion

(1) Refit the pilots' windscreen roof panel (Ref. 25-12-00).

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) Carry out an Operational Test of the system as detailed in 33-15-00, Adjustment/Test.

PANEL LIGHTING - DESCRIPTION AND OPERATION

1. General

Panel lighting is provided by electroluminescent (EL) panels which illuminate legends and other markings engraved on them.

2. Electroluminescent Panels

Electroluminescent panels, shaped to accommodate instruments and indicators, are fitted to those panels requiring illuminated engravings. Each panel comprises a phosphor-impregnated electroluminescent layer sandwiched between two electrically-conducting layers, one of which is transparent. On the outer face of the transparent conducting layer is a clear Perspex panel surfaced with a thin opaque sheet of PVC coloured grey. The whole assembly is bonded together to form one panel. Legends and other markings are engraved through the grey opaque surface to the clear layer below.

Electrical connections to the conducting layer are made at the back of the panel either by flying leads or by a coaxial connector.

3. Operation (Ref. Fig.001 and 002)

A. Control

The EL panels are supplied from one phase of an associated 115 V a.c. busbar, through the contacts of a lighting control switch. The lighting control switches are mounted on switch panels located close to the EL panels they control. Table 1 lists the lighting control switches and the associated panels on which EL panels are mounted.

SWITCH LOCATION	SWITCH ENGRAVING	ELECTROLUMINESCENT PANEL LOCATION
LH switch panel 12-211	LH DASH INSTRUMENTS	LH dash panel 2-211
		LH side console 1-211
RH switch panel 5-212	RH DASH INSTRUMENTS	RH dash panel 2-212
		RH side console

SWITCH LOCATION	SWITCH ENGRAVING	ELECTROLUMINESCENT PANEL LOCATION
		1-212
Roof panel 4-211	CENTRE CONSOLE PANEL	Aft centre console 9-211
	GLARESHIELD	Centre glareshield 5-211
	CENTRE DASH	Centre dash panel 6-211
	ROOF	Roof panel 4-211
LH side console 1-211-2	SIDE CONSOLE	LH side console 1-211-2
		LH switch panel 12-211
RH side console 1-212-2	SIDE CONSOLE	RH side console 1-212-2
		RH switch panel 5-212
Circuit breaker panel 3-213	PANEL	Lighting panel on circuit breaker panel 3-213
		Oxygen and jack box panel 20-215
Lighting control panel 11-214	PANEL	3rd crew member's station, zone 214
	C/B	Circuit breaker panels 1-213 to 5-213 (lighting bars)

Electroluminescent Panel Lighting
Table 1

The C/B switch on lighting control panel 11-214 and the

PANEL switch on circuit breaker panel 3-213 are two-position (ON-OFF) toggle switches. The remaining switches are multi-wafer rotary switches, each having one wafer connected as an 'off-on' switch for EL panel lighting control; other wafers are associated with instrument lighting (Ref. 33-17-00).

B. Functional Description

When a suitable a.c. voltage is applied to the electroluminescent panel the phosphor particles are excited into luminescence and the entire area of the panel is illuminated, but light shows only through the engraved portions of the opaque panel.

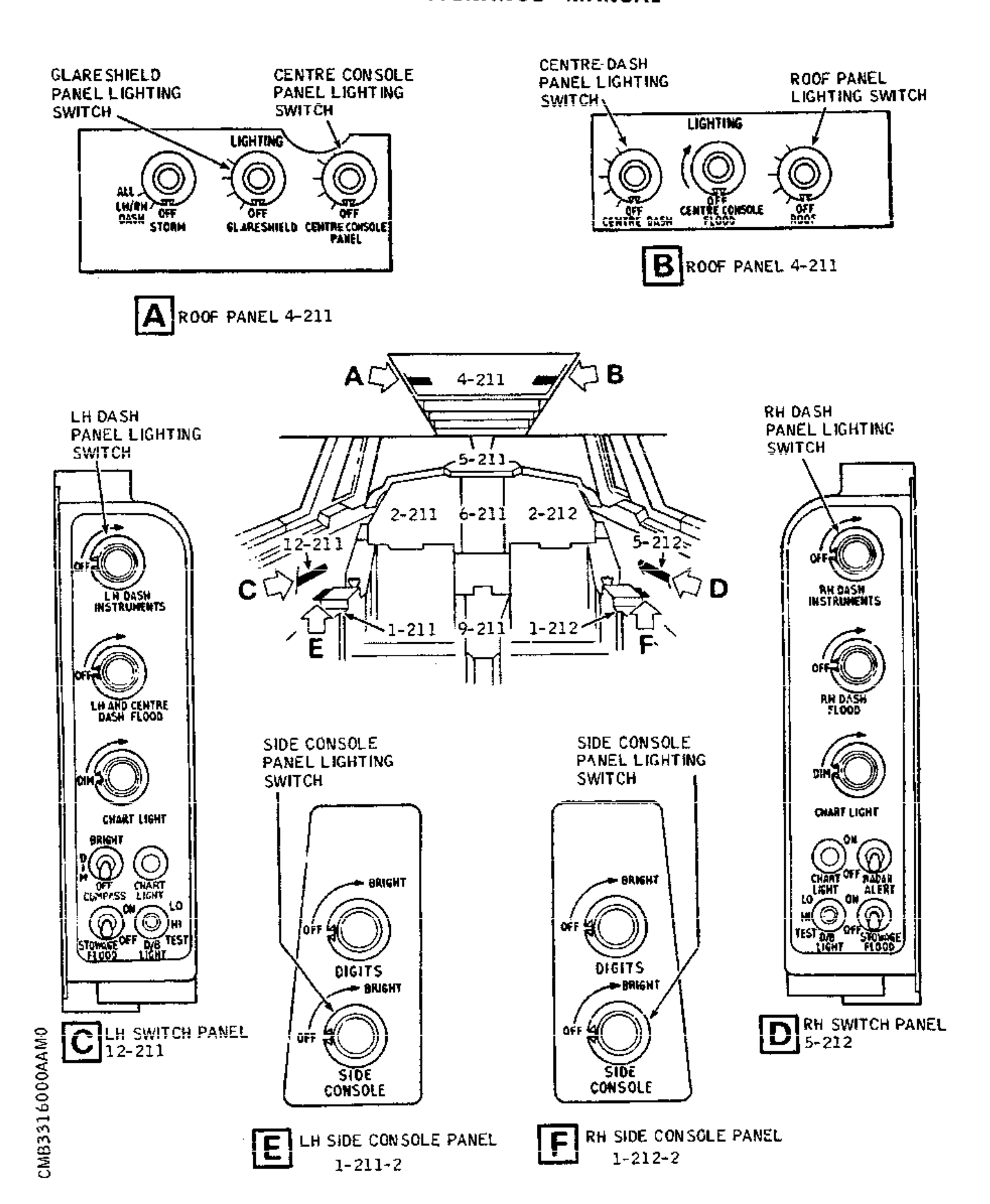
4. Electrical Power Supplies

Table 2 lists the busbars and circuit breaker locations for the various EL panels.

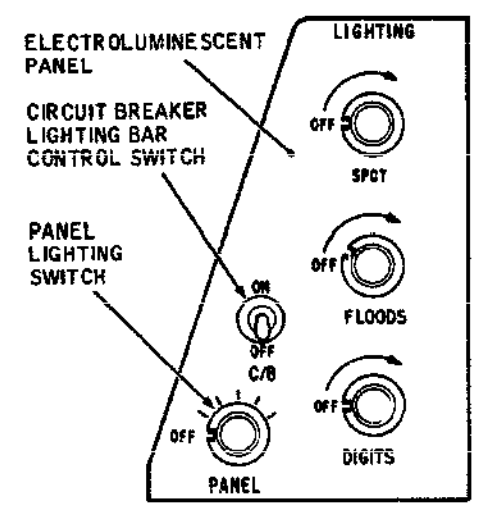
PANEL	BUSBAR SUPPLY	CIRCUIT BREAKER PANEL
LH dash panel 2-211) LH side console 1-211) RH dash panel 2-212) RH side console 1-212) Centre glare-shield 5-211) Centre dash 6-211) Aft centre console 9-211)	No.2 main 115 V a.c.	13-215
Roof panel 4-211) RH switch)	No.3 main 115 V a.c.	13-216

PANEL	BUSBAR SUPPLY	CIRCUIT BREAKER PANEL
panel 5-212)) Lighting panel) on CB panel) 3-213)) Oxygen and) jack box panel) 20-215)		
LH side) console) 1-211-2)) LH side) console) 1-211-3)) LH switch) panel 12-211)	No.1 main 115 V a.c.	14-215
3CM station, zone 214	No.4 main 115 V a.c.	14-216
CB panels 1-213 to 5-213	No.1 essential 115 V a.c.	2-213

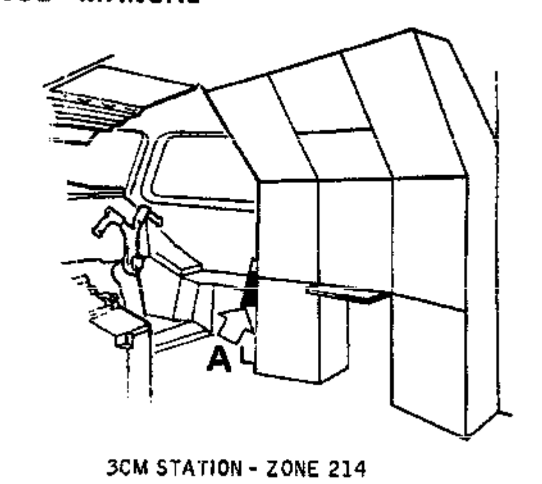
Electrical Power Supplies
Table 2



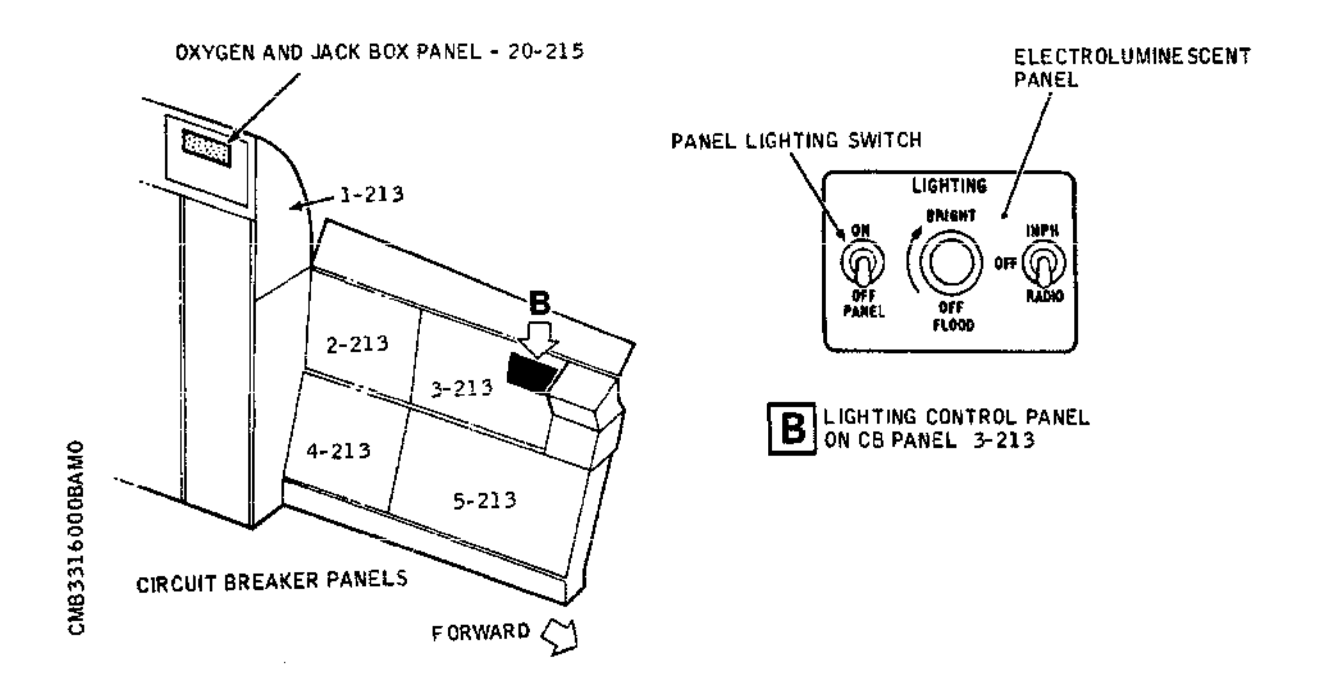
Panel Lighting Controls -
Flight Compartment (Forward)
Figure 001



A LIGHTING CONTROL PANEL 11-214



3CM STATION - ZONE 214



B LIGHTING CONTROL PANEL ON CB PANEL 3-213

Panel Lighting Controls - Flight Compartment (Rear)
Figure 002

PANEL LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

R CAUTION: SWITCH OFF PANEL LIGHTING, WHEN NOT IN USE, TO CONSERVE
R THE LIFE OF THE ELECTROLUMINESCENT PANELS.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

Where more than one group of electroluminescent (EL) panels are supplied from the same power source, through a common circuit breaker, those circuits are considered similar, therefore the procedures and charts are applicable to each circuit. Where identical components are involved, i.e., one in each circuit, the references to the associated components are listed thus: 'Renew Switch (1), (2), (3) or (4)'. Where one group of EL panels only is supplied from an individual power source, a separate chart is shown for that circuit.

Each panel lighting control switch and the associated panels on which the group of EL panels is mounted, are listed in Adjustment/Test.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

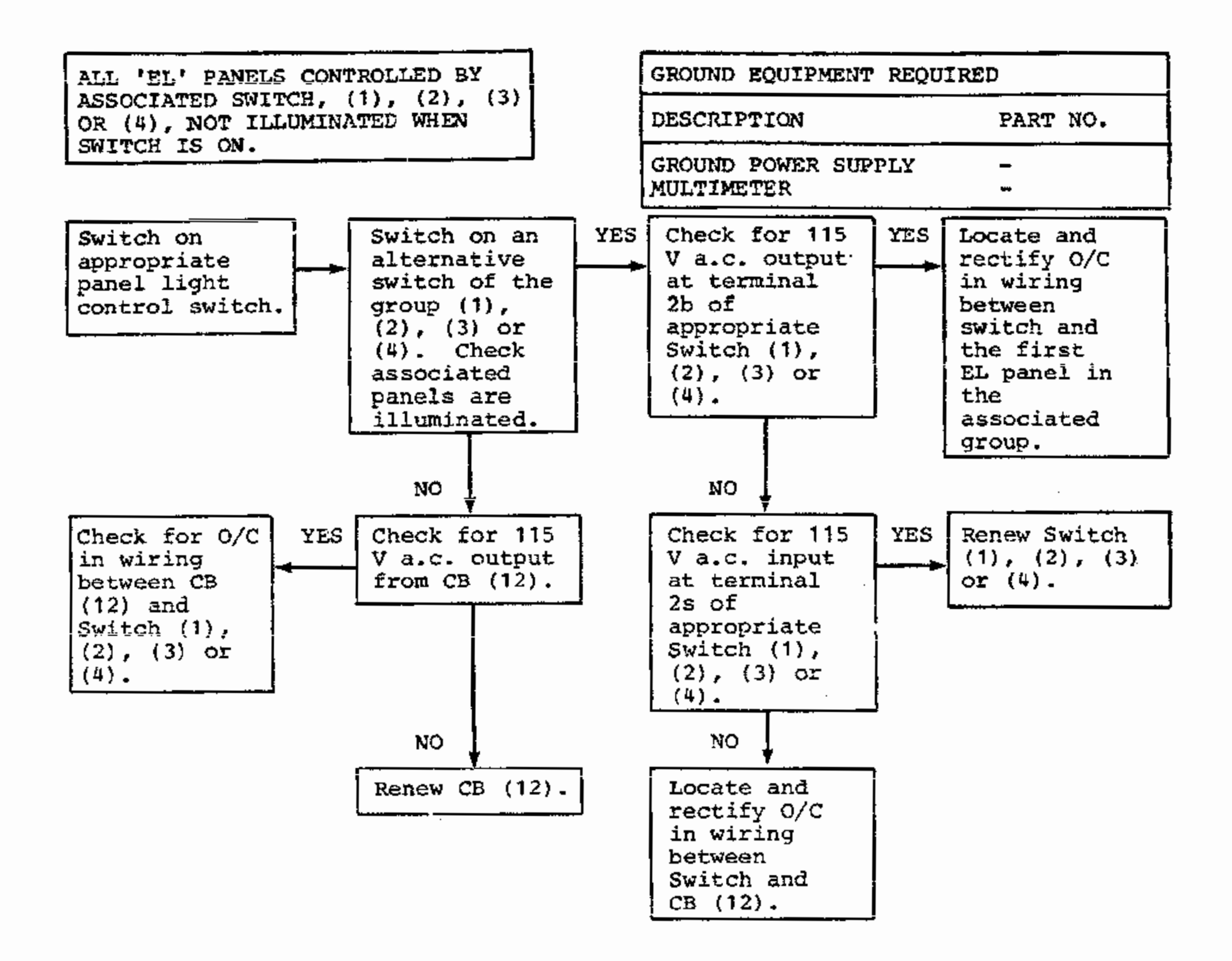
A. Prepare to trouble shoot (Ref. para.2.). Switch on each electroluminescent (EL) panel lighting control switch, in turn, and check that all associated panel engravings are illuminated. IF -

NOT OK —

1. The engravings on one panel only not illuminated - check electrical connectors at rear of the panel. Retest. If fault not cleared, renew panel.
2. All EL panels, controlled by following associated switches, not illuminated:
   - (a) Switch (1), (2), (3) or (4) - Chart 101.
   - (b) Switch (5) - Chart 102.
   - (c) Switch (6) or (7) - Chart 103.
   - (d) Switch (8) - Chart 104.
   - (e) Switch (9) - Chart 105.
   - (f) Switch (10) - Chart 106.
   - (g) Switch (11) - Chart 107.

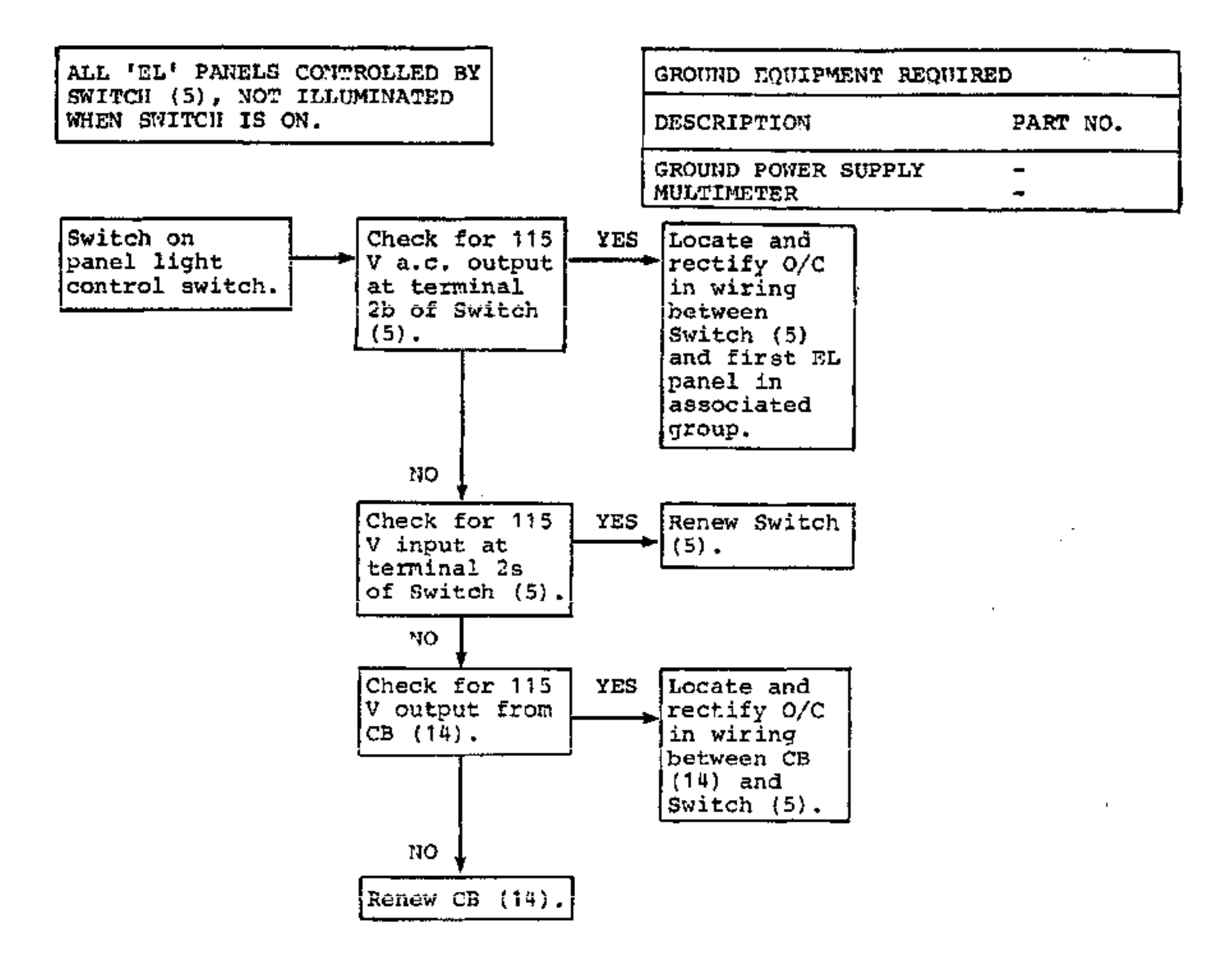
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GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-



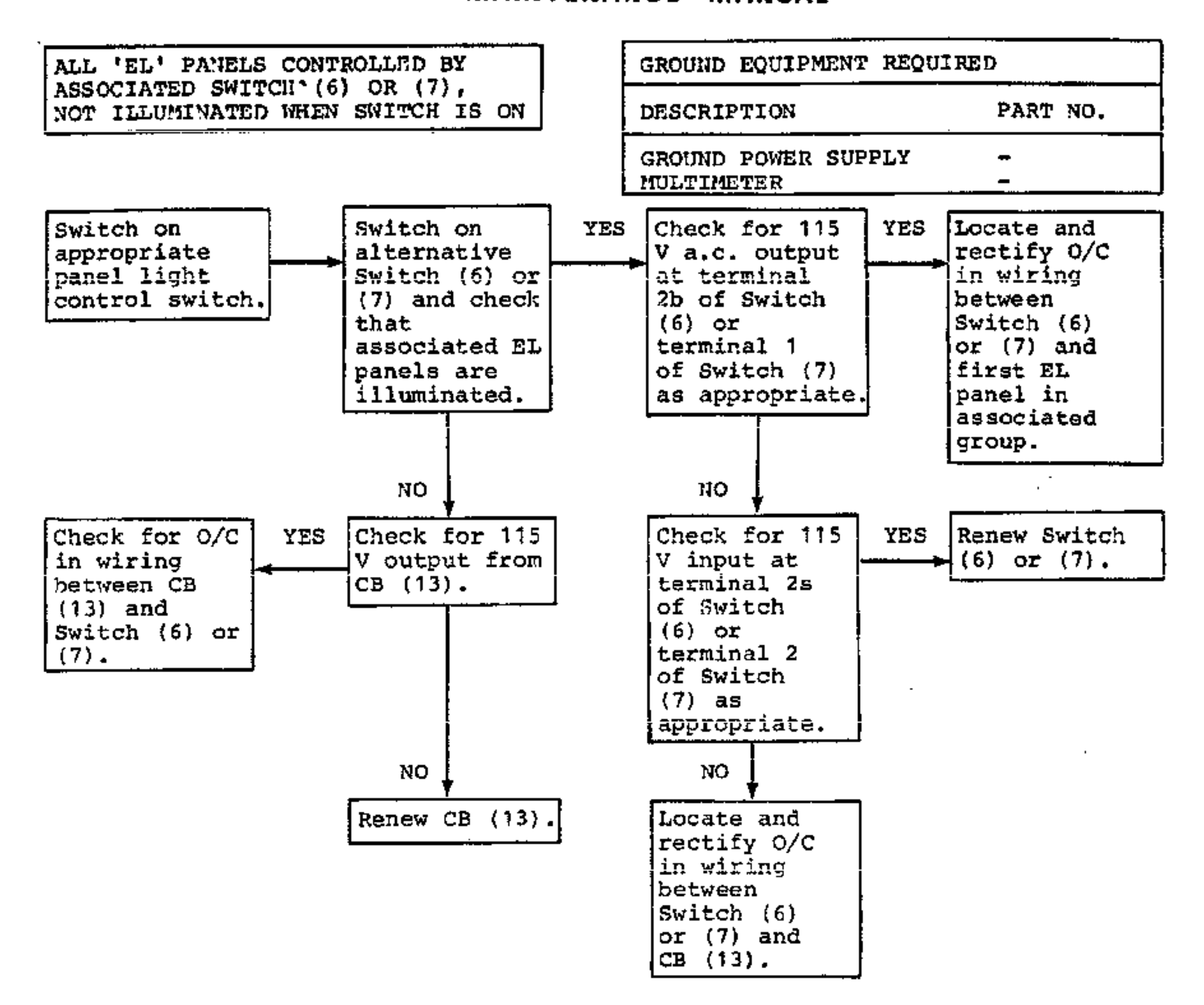
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Chart 101



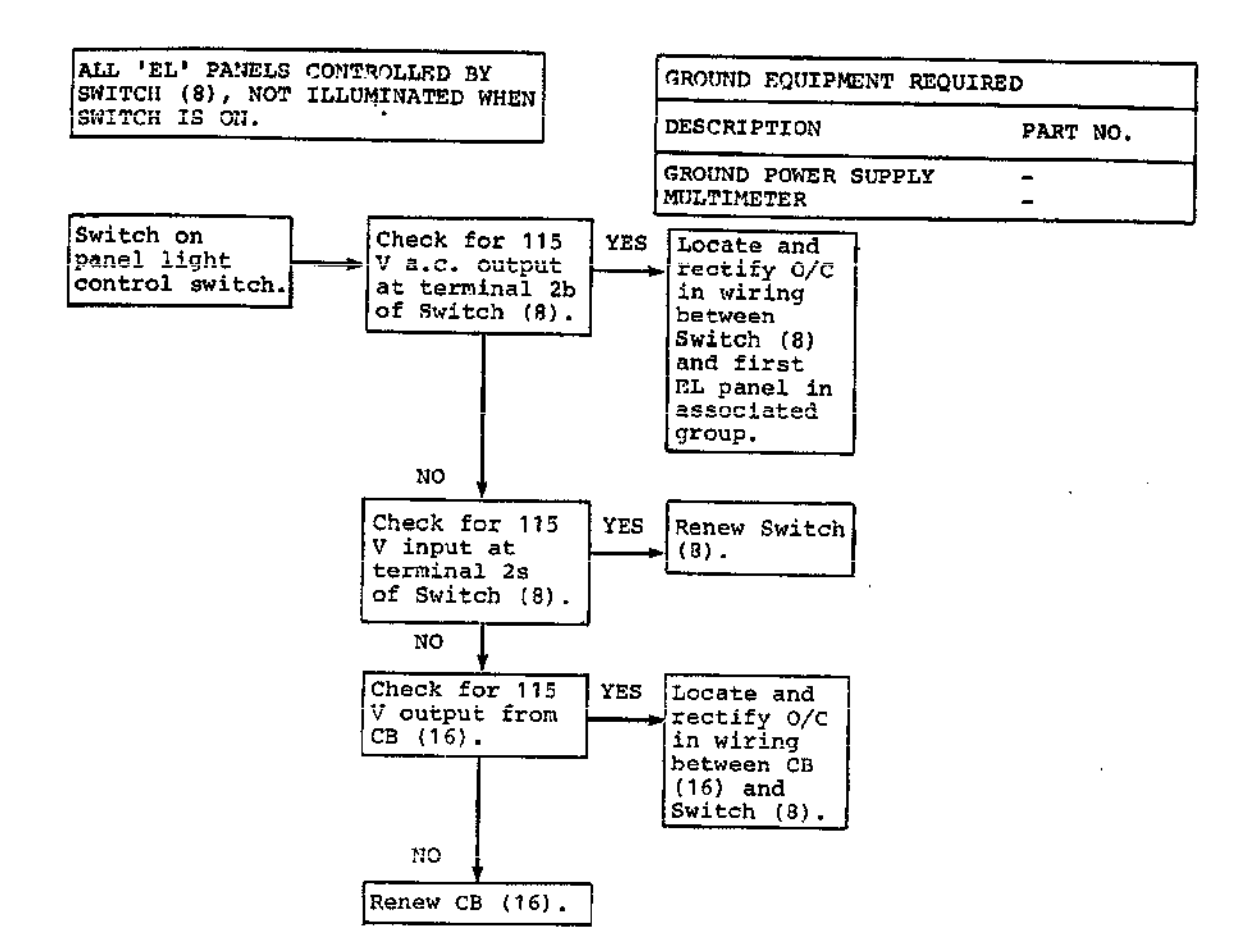
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Chart 102



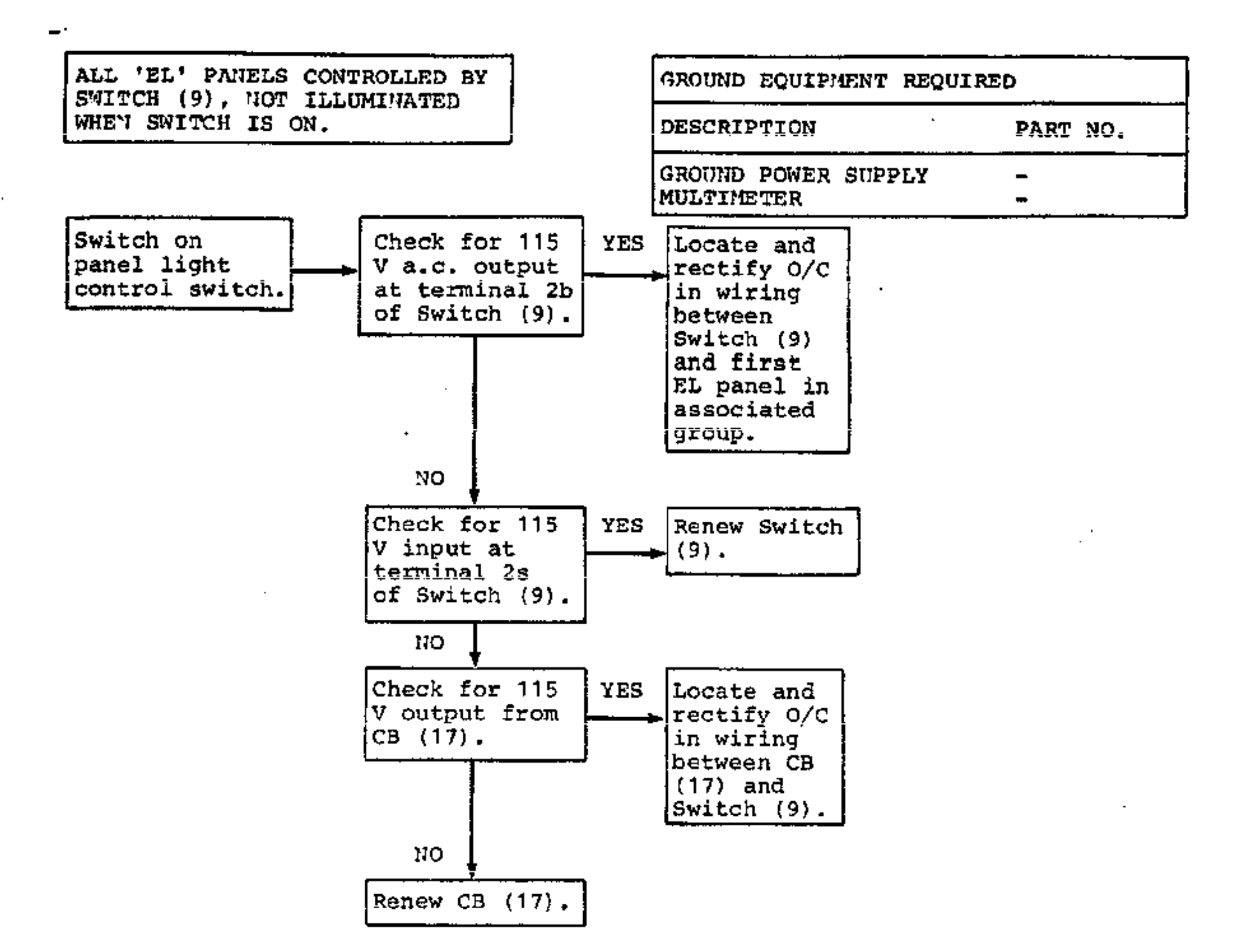
CMB3316001DAM0

Chart 103



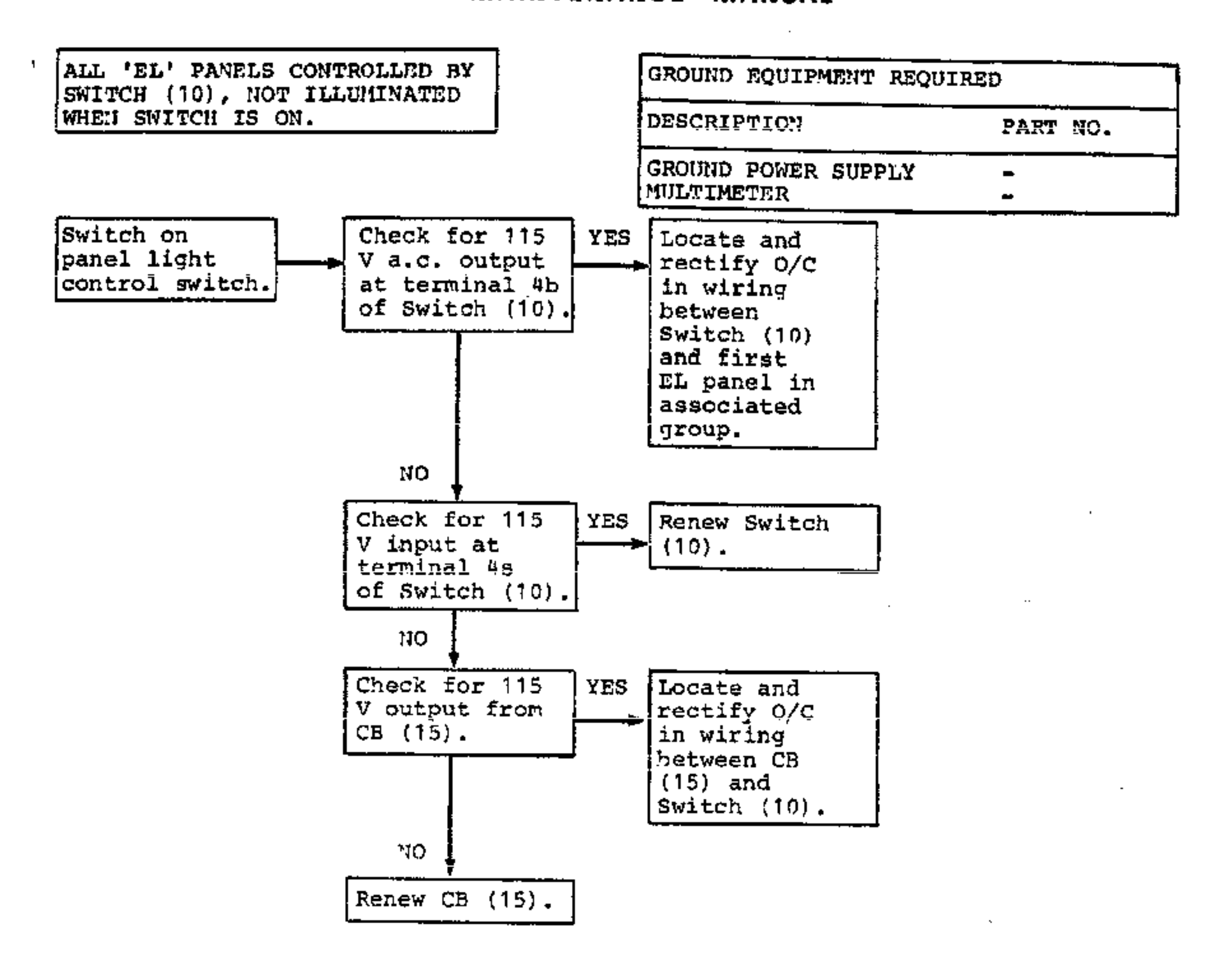
CMB3316001EAM0

Chart 104



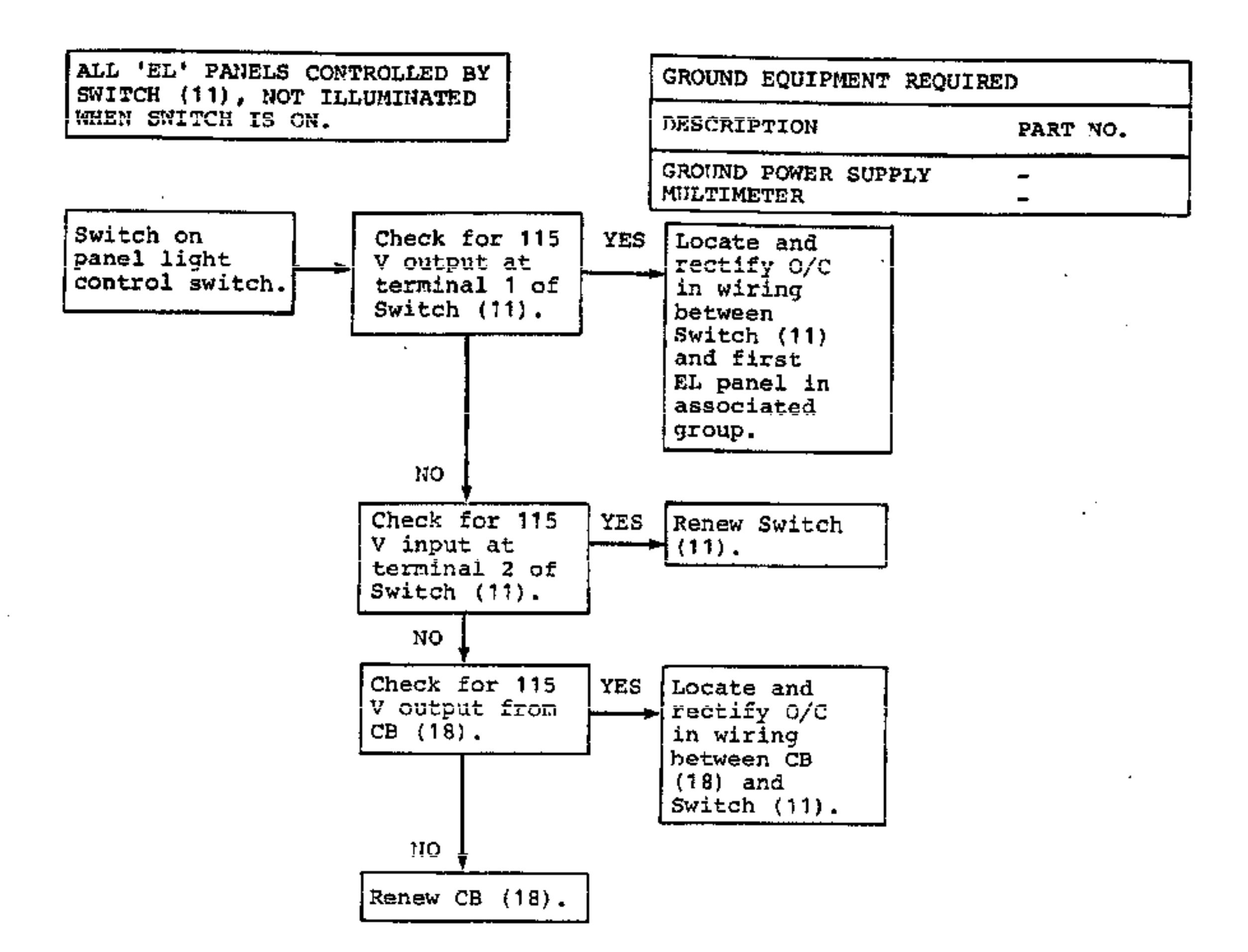
CMB3316001FAM0

Chart 105



CMB3316001GAM0

Chart 106



CMB3316001HAM0

Chart 107

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Switch - LH DASH INSTRUMENTS	-	12-211	L382	LH switch panel	33-16-00 R/I	
(2) Switch - RH DASH INSTRUMENTS	-	5-212	L381	RH switch panel	33-16-00 R/I	
(3) Switch - GLARESHIELD	-	4-211	L402	Roof panel	33-16-00 R/I	
(4) Switch - CENTRE DASH	-	4-211	L401	Roof panel	33-16-00 R/I	
(5) Switch - CENTRE CONSOLE PANEL	-	4-211	L383	Roof panel	33-16-00 R/I	
(6) Switch - ROOF	-	4-211	L384	Roof panel	33-16-00 R/I	
(7) Switch - PANEL	-	3-213	L91	Circuit breaker panel 3-213	33-16-00 R/I	
(8) Switch - SIDE CONSOLE	-	1-211 -2	L89	LH side console	33-16-00 R/I	
(9) Switch - SIDE CONSOLE	-	1-212 -2	L90	RH side console	33-16-00 R/I	
(10) Switch - PANEL	-	11-214	L385	Lighting control panel 11-214	33-16-00 R/I	
(11) Switch - C/B	-	11-214	L92	Lighting control panel 11-214	33-16-00 R/I	
(12) Circuit breaker 115 V	-	13-215	L85	Map ref.A11	24-50-00 R/I	
(13) Circuit breaker 115 V	-	13-216	L81	Map ref.A8	24-50-00 R/I	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(14) Circuit breaker 115 V	-	13-215	L82	Map ref.B12	24-50-00 R/I	
(15) Circuit breaker 115 V	-	14-216	L86	Map ref.D9	24-50-00 R/I	
(16) Circuit breaker 115 V	-	14-215	L83	Map ref.F10	24-50-00 R/I	
(17) Circuit breaker 115 V	-	13-216	L84	Map ref.D8	24-50-00 R/I	
(18) Circuit breaker 115 V	-	2-213	L87	Map ref.A9	24-50-00 R/I	

Component Identification
Table 101

PANEL LIGHTING - MAINTENANCE PRACTICES

1. General

A. The following sub-panels electroluminescent lighting must be maintained serviceable:

Location	Sub-panels
Roof Panel	Auto Stab/Artificial Feel/ Electric Trim/Flying Control Inverter/Signal Mode/Anti-Stall

B. The remaining panels on the Flight Engineer's station, Pilots' centre, side or dash panels, need not be changed, if only the electroluminescent lighting is unserviceable.

R On panels 1-213 to 5-213 the Circuit Breaker titling area
R panels need not be changed if only the electroluminescent
R lighting is unserviceable.

PANEL LIGHTING - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

WHEN DISCONNECTING FLYING LEADS FROM THE ASSOCIATED MODULE BLOCK, ENSURE THAT THE CORRECT PIN INSERTS ARE WITHDRAWN FROM THE SOCKET.

1. General

This topic contains instructions necessary for the removal and installation of electroluminescent (EL) panels fitted on all instrument and switch panels in the flight compartment, and circuit breaker lighting bars fitted on circuit breaker panels in zone 213.

Electrical connections are made at the back of each EL panel either by flying leads or by a coaxial connector, and at the back of each circuit breaker lighting bar by screw-type terminals.

Instructions for the removal and installation of associated switches on the flight compartment roof panel are detailed in 33-00-00, and for all other associated switches in 33-10-00.

2. Electroluminescent Panels

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the associated light control switch, as listed in Adjustment/Test, Table 501, is at OFF.

(2) Trip the appropriate circuit breaker listed below, and fit a safety clip.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
EL panel supplies			
ROOF & CB PNL 3-213 LTS SUP	13-216	L81	A8
CTR CONSOLE PNL LTG SUP	13-215	L82	B12
LH CONSOLE PNL LTG SUP	14-215	L83	F10
RH CONSOLE PNL LTG SUP	13-216	L84	D8
DASH & G/SHIELD PNL LTG SUP	13-215	L85	A11
3CM STN PNL LTG SUP	14-216	L86	D9

CAUTION: 'EL' PANELS ARE VULNERABLE TO DAMAGE BY SCRATCHING AND CRACKING. ENSURE THAT THE SCREWDRIVER DOES NOT DAMAGE THE POLISHED WALL OF THE PANEL.

(3) Remove the cap, unscrew the clutch nut and withdraw the knob from any rotary switch fitted on the EL panel.

C. Remove an EL Panel Fitted with a Coaxial Connector

(1) Remove the screws and washers securing the EL panel to its mounting and withdraw the panel suffuciently to gain access to the coaxial connector.

(2) Withdraw the coaxial connector from the panel and remove the panel from its mounting.

D. Install an EL Panel Fitted with a Coaxial Connector

(1) Comply with the electrical safety precautions.

(2) Fit the coaxial connector to the EL panel.

(3) Position the EL panel on its mounting and secure it with the screws and washers.

E. Remove an EL Panel Fitted with Flying Leads

(1) Release the backing plate quick-release fasteners, or remove the screws and washers, as appropriate, and withdraw the complete panel assembly from its housing.

(2) Release the flying leads from the loom ties and, using a suitable tool, withdraw the pin inserts from the module block.

(3) Disengage the EL panel from the backing plate by removing the securing screws and washers.

F. Install an EL Panel Fitted with Flying Leads

(1) Comply with the electrical safety precautions.

(2) Fit the EL panel to its backing plate with the flying leads through the aperture.

(3) Secure the EL panel to the backing plate with the screws and washers.

(4) Using a suitable tool, connect the flying leads to the module block, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(5) Secure the flying leads to the cable loom with suitable ties in accordance with 20-27-15.

(6) Fit the panel assembly to its mounting and secure it with the quick-release fasteners, or screws and washers, as appropriate.

G. Conclusion

(1) Where appropriate, fit each switch knob on its spindle, ensuring that the spindle drive spigot is engaged with the slot in the knob. Tighten the clutch nut and fit the end cap to the knob.

(2) Remove the safety clip and set the circuit breaker tripped before removal.

(3) Make available electrical ground power as detailed in 24-41-00, Servicing.

(4) Switch on the associated panel light control switch and check that EL panel engravings are illuminated.

(5) Set the switch to "OFF".

(6) Switch off and disconnect electrical ground power as detailed in 24-41-00, Servicing.

3. Circuit Breaker Lighting Bars

A. Prepare

(1) Set the C/B (ON - OFF) switch on the 3CM switch panel (panel 11-214) to "OFF".

(2) Trip the 3CM STN CB PNL LTS SUP circuit breaker L87, on panel 2-213, map ref. A9, and fit a safety clip.

B. Remove

(1) Remove the screws securing the appropriate lighting bar to the circuit breaker panel and withdraw the bar from the mounting brackets.

(2) Disconnect the electrical cables from the back of the lighting bars.

C. Install

(1) Comply with the electrical safety precautions.

(2) Connect the electrical cables to the circuit breaker lighting bar, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(3) Fit the lighting bar on the mounting brackets and secure it with the screws.

D. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00, Servicing.

(2) Remove the safety clip and reset the circuit breaker tripped before removal.

(3) Set the C/B switch, on the 3CM switch panel, to "ON" and check that the lighting bar is illuminated.

(4) Set the C/B switch to "OFF".

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00, Servicing.

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

PANEL LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

R CAUTION: SWITCH OFF PANEL LIGHTING, WHEN NOT IN USE, TO
R CONSERVE THE LIFE OF THE ELECTROLUMINESCENT PANELS.

1. General

This topic contains an Operational Test only, which details the procedure to prove the correct operation of the electroluminescent panels in the flight compartment. Functional and System Tests are not considered necessary in this application.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test

(1) Switch on each control switch listed in Table 501, in turn, and check that the associated electroluminescent panel engravings are adequately illuminated.

SWITCH LOCATION	SWITCH ENGRAVING	ELECTROLUMINESCENT PANELS LOCATION
LH switch panel 12-211	LH DASH INSTRUMENTS	LH dash panel 2-11
		LH side console 1-211
RH switch panel 5-212	RH DASH INSTRUMENTS	RH dash panel 2-212
		RH side console 1-212
Roof panel 4-211	CENTRE CONSOLE PANEL	Aft centre console 9-211
	GLARESHIELD	Centre glareshield 5-211
	CENTRE DASH	Centre dash panel 6-211

SWITCH LOCATION	SWITCH ENGRAVING	ELECTROLUMINESCENT PANELS LOCATION
	ROOF	Roof panel 4-211
LH side console 1-211-2	SIDE CONSOLE	LH side console 1-211-2
		LH switch panel 12-211
RH side console 1-212-2	SIDE CONSOLE	RH side console 1-212-2
		RH switch panel 5-212
Circuit breaker panel 3-213	PANEL	Lighting panel on circuit breaker panel 3-213
		Oxygen and jack box 20-215
Lighting control panel 11-214	PANEL	3rd crew member's station, zone 214
	C/B	Circuit breaker panels 1-213 to 5-213 (Lighting bars)

Electroluminescent Panel Lighting
Table 501

(2) Return all control switches to the 'off' position and check that all electroluminescent panel lighting is extinguished.

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

INSTRUMENT LIGHTING - DESCRIPTION AND OPERATION

1. General

Instrument lighting is provided by miniature filaments contained within each instrument, magnetic indicator and control unit. Except for the standby COMPASS control toggle switch on the left switch panel, and the PANEL jack and station box light control toggle switch on circuit breaker panel 3-213, all instrument lighting controls are multi-wafer rotary switches. Two or more filaments are fitted in each instrument, magnetic indicator and control unit to maintain illumination if one filament fails. The standby compass contains only one filament.

Control transformers, mounted close to associated instruments, provide stepped-down integral lighting supplies.

R Dimming facilities for the digital displays associated
R with the distance measuring equipment (DME) and the
R horizontal situation indicators (HSIs)(Ref. Chap.34),
R are provided by rotary 'dimmer-off' controls, one of which
R is mounted on the left console and one on the right
R console.

2. Control Transformers

The primary of each transformer is stepped in five stages to give an output at the secondary of 2.5 V, 3.4 V, 4.2 V, 5.0 V and 5.9 V a.c. from a primary input of 115 V a.c. Each output is protected by fuses fitted in the transformer case and electrical connections are made at terminals on top of the transformer.

R 3. Rotary 'Dimmer-off' Control

R Each rotary 'dimmer-off' control comprises a rotary control
R switch and three variable resistors. Each variable
R resistor is connected in series with a fixed resistor to
R provide a reduced and variable voltage output from a 28 V
R d.c. input supply.

R 4. Operation (Ref. Fig.001 and 002)

A. Control

The input of each control transformer is taken from one phase of an associated 115 V a.c. busbar through the contacts of an appropriate lighting control switch. The stepped-down output of each transformer is fed to the associated instruments, magnetic indicators or

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control units. The lighting control switches are mounted on switch panels located close to the instrument lighting they control. The standby compass integral lighting is supplied from the 'A' essential 28 V d.c. busbar through the contacts of a lighting control switch.

The standby COMPASS lighting control switch on panel 12-211 is a double-pole three-position (BRIGHT - DIM - OFF) toggle switch. The PANEL switch on lighting control panel 3-213 is a two-position (ON - OFF) toggle switch. The remaining switches are multi-wafer rotary switches. In each rotary switch the contacts of one wafer connect the 115 V a.c. supply to the tapped primary of the associated transformer and act as a dimmer control for the integral lighting supplies from the transformer secondary. The contacts of the other wafers are associated with panel lighting (Ref. 33-16-00).

R The input to each variable resistor in the rotary
R 'dimmer/off' controls is connected to the associated
R main 28 V d.c. busbar via a fixed resistor. The
R variable voltage outputs, determined by the setting
R of the appropriate DIGITS rotary control switch, are
R fed to the associated instruments to control the bright-
R ness of the digital display.

R Table 1 lists the lighting control and digital dimming
R control switches and the associated panels on which
R illuminated components are mounted.

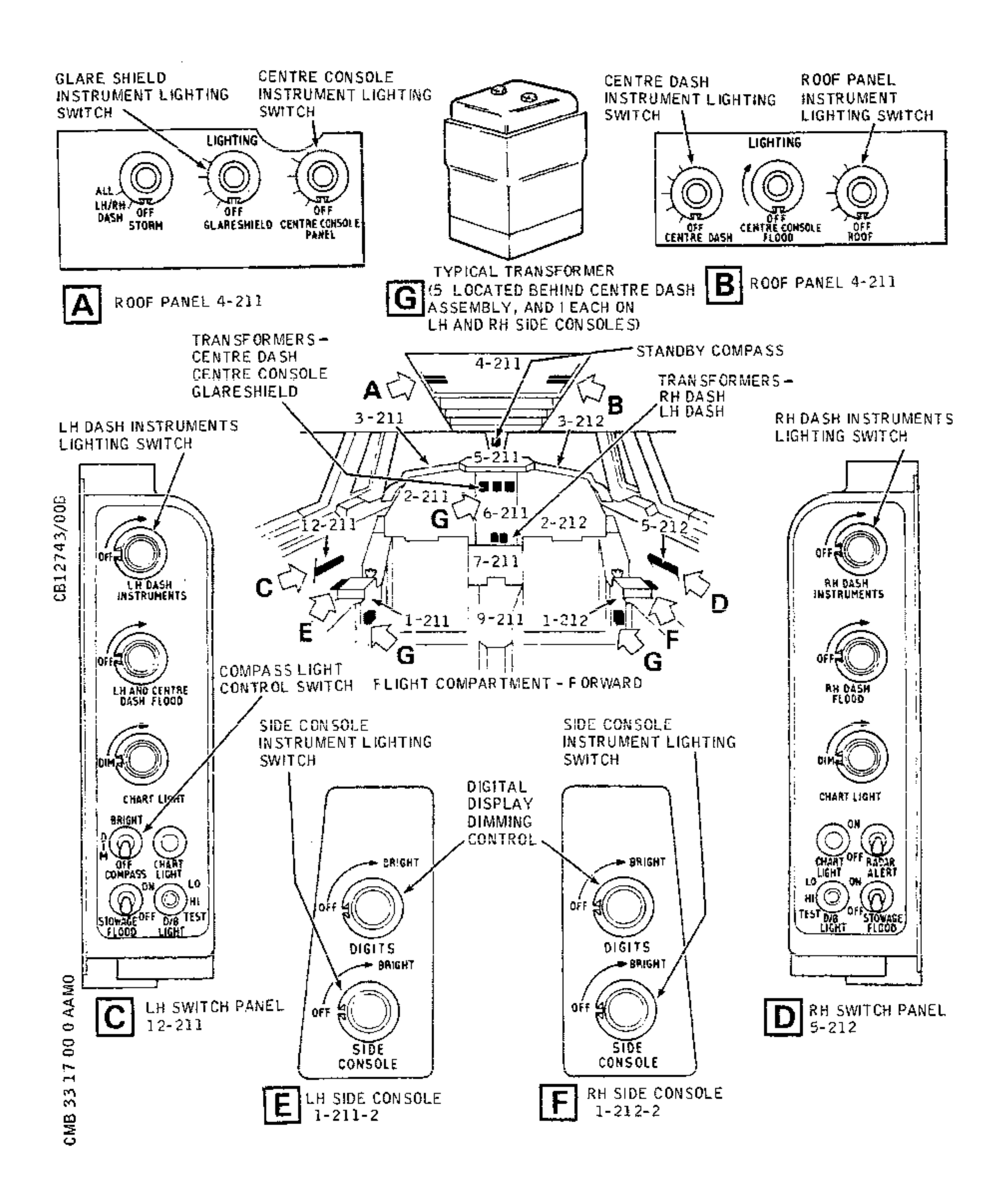
SWITCH LOCATION.	SWITCH ENGRAVING	LOCATION OF ILLUMINATED COMPONENTS
LH switch panel 12-211	COMPASS (toggle switch)	Windscreen centre pillar
	LH DASH INSTRUMENTS	LH dash panel 2-211
RH switch panel 5-212	RH DASH INSTRUMENTS	RH dash panel 2-212
Roof panel 4-211	CENTRE CONSOLE PANEL	Aft centre console 9-211 Forward centre console 7-211
	GLARESHIELD	Centre glareshield 5-211

SWITCH LOCATION	SWITCH ENGRAVING	LOCATION OF ILLUMINATED COMPONENTS
	CENTRE DASH	Centre dash panel 6-211
	ROOF	Roof panel 4-211
LH side console 1-211-2	SIDE CONSOLE	LH side console 1-211
	DIGITS	LH dash panel 2-211
		Centre glareshield 5-211 (If digital display fitted)
RH side console 1-212-2	SIDE CONSOLE	RH side console 1-212
	DIGITS	RH dash panel 2-212
		Centre glareshield 5-211 (If digital display fitted)
Circuit breaker panel 3-213	PANEL (toggle switch)	Headset jack box 7-213 Station box 7-213 Headset jack box 20-215
Lighting control panel 11-214	PANEL	3rd crew member's station, zone 214 - RH instruments, centre instruments and LH instruments

Instrument Lighting
Table 1

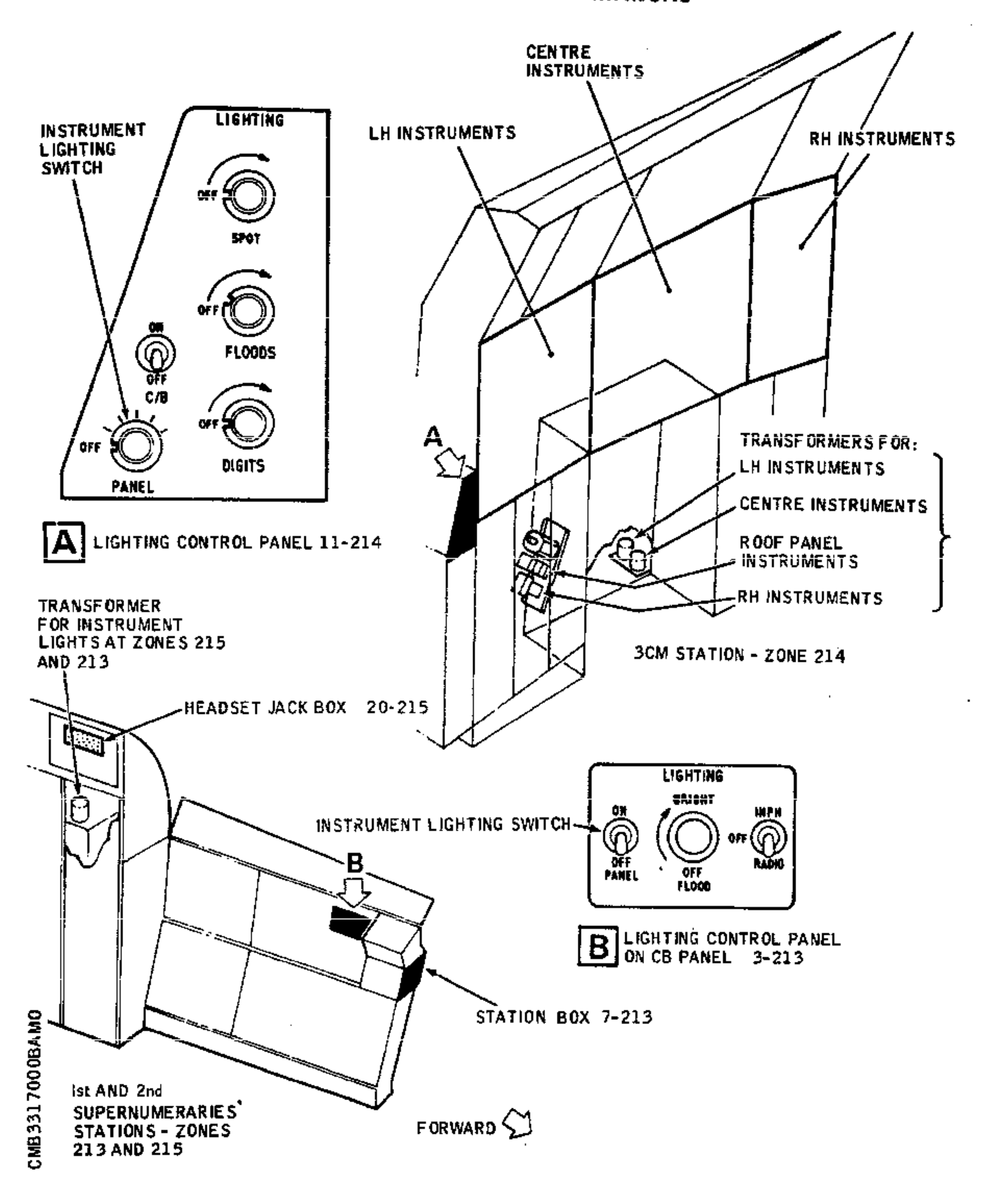
B. Functional Description

With electrical supplies available, when a lighting control rotary switch is rotated the 115 V a.c. supply is connected to each of the five tappings on the associated control transformer primary, in turn, to provide a varying output which controls the brightness of the associated instrument, magnetic indicator and control unit integral lighting. 28 V d.c. is applied to the fixed resistor in each of the dimming control circuits, the output of which is fed through the associated variable resistor to control the brightness



- Instrument Lighting Controls and Equipment -
Flight Compartment (Forward)
Figure 001

R



- Instrument Lighting Controls and Equipment -
Flight Compartment (Rear)
Figure 002

of the appropriate digital display, depending on the setting of the DIGITS control switch.

When DIM is selected at the standby COMPASS light control toggle switch the 28 V d.c. supply is connected to the standby compass integral filament, through the switch contacts and a dimming resistor, and the filament lights at reduced brightness. When BRIGHT is selected the dimming resistor is bypassed and the filament lights at full brightness.

When ON is selected at the PANEL toggle switch on panel 3-213, the 115 V a.c. is connected to No.5 tapping on the primary winding of the associated transformer, through the switch contact, to provide a stable output to the appropriate headset jack box and station box integral lighting.

5. Electrical Power Supplies

Table 2 lists the busbars and circuit breaker locations for the panels on which illuminated components are mounted.

	LOCATION OF ILLUMINATED COMPONENTS	BUSBAR SUPPLY	CIRCUIT BREAKER PANEL
	Windscreen centre pillar	'A' essential 28 V d.c. busbar	1-213
	LH dash panel 2-211	No.2 main 115 V a.c. busbar	13-215
R	Before SB 33-018		
R R R		'A' main 28 V d.c. busbar (Digital display dimming)	15-215
R	After SB 33-018	For A/C 001-004,	
R R R		'A' essential 28 V d.c. busbar (Digital display dimming)	1-213
	LH side console	No.1 main 115 V a.c.	14-215

LOCATION OF ILLUMINATED COMPONENTS	BUSBAR SUPPLY	CIRCUIT BREAKER PANEL
1-211	busbar	
RH dash panel 2-212	No.3 main 115 V a.c. busbar	13-216
	'B' main 28 V d.c. busbar (Digital display dimming)	15-216
RH side console 1-212	No.4 main 115 V a.c. busbar	14-216
Centre glareshield 5-211	No.4 main 115 V a.c. busbar	14-216
	'A' and 'B' main 28 V d.c. busbars (If digital display fitted)	15-215 15-216
Centre dash 6-211	No.4 main 115 V a.c. busbar	14-216
Forward centre console 7-211	No.4 main 115 V a.c. busbar	14-216
Rear centre console 9-211	No.4 main 115 V a.c. busbar	14-216
Roof panel 4-211	No.2 main 115 V a.c. busbar	13-215
Headset jackbox 20-215	No.1 main 115 V a.c. busbar	14-215
Station jackbox 7-213	No.1 main 115 V a.c. busbar	14-215
3CM station, zone 214	No.3 main 115 V a.c. busbar	13-216

Electrical Power Supplies
Table 2

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INSTRUMENT LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

Where circuits are similar, they are grouped so that the procedures and charts are applicable to each circuit of the associated group. Where identical components are involved, i.e., one in each circuit, the references to the associated components listed in Table 101 are given, e.g., 'Renew associated Switch (1), (2), (3) or (4)'.

Each instrument lighting control switch and the associated panels on which instruments are mounted, are listed in Adjustment/Test.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

A.

Prepare to trouble shoot (Ref. para.2.). Switch on at each instrument light control switch, in turn, and check that the associated instruments are illuminated and that the lights vary in brightness when the switch is rotated. IF -

OK

NOT OK:

1. One instrument only not lit - change instrument.
2. Instruments on LH or RH dash, centre console or roof panel not lit - Chart 101.
3. Instruments on glareshield or centre dash not lit - Chart 102
4. Instruments on LH console, oxygen mask stowage or jack/station box filaments not lit - Chart 103.
5. Instruments on RH console and oxygen mask stowage not lit - Chart 104.
6. Instruments at 3CM station RH, LH or centre areas not lit - Chart 105.
7. Standby compass not lit when switch is set to BRIGHT or DIM - Chart 106.
8. Digital dimming control of DME only, HSI only or VOR/DME controller only when associated DIGIT control switch rotated - renew Switch (37) or (38).
9. No digital dimming control of DME, HSI and VOR/DME controller when associated DIGIT control switch is rotated - check for 28 V d.c. output from associated CB (35) or (36). If NOT OK - renew CB (35) or (36). IF OK - check associated wiring.

INSTRUMENTS ON LH DASH OR RH DASH, CENTRE CONSOLE OR ROOF PANEL NOT LIT WHEN ASSOCIATED SWITCH SET TO 'ON'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

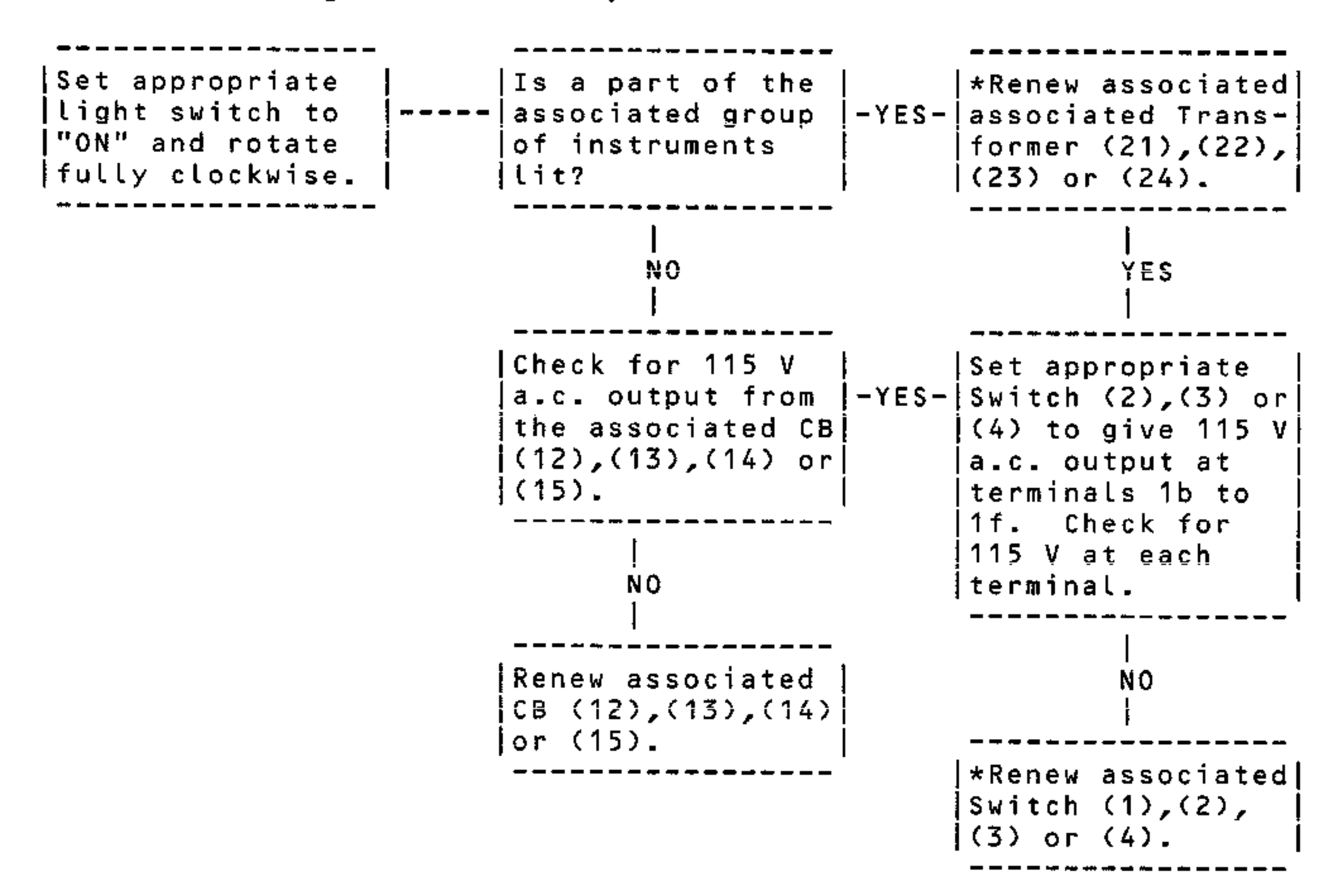


Chart 101

INSTRUMENTS ON GLARESHIELD OR CENTRE DASH NOT LIT WHEN ASSOCIATED SWITCH SET TO 'ON'

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

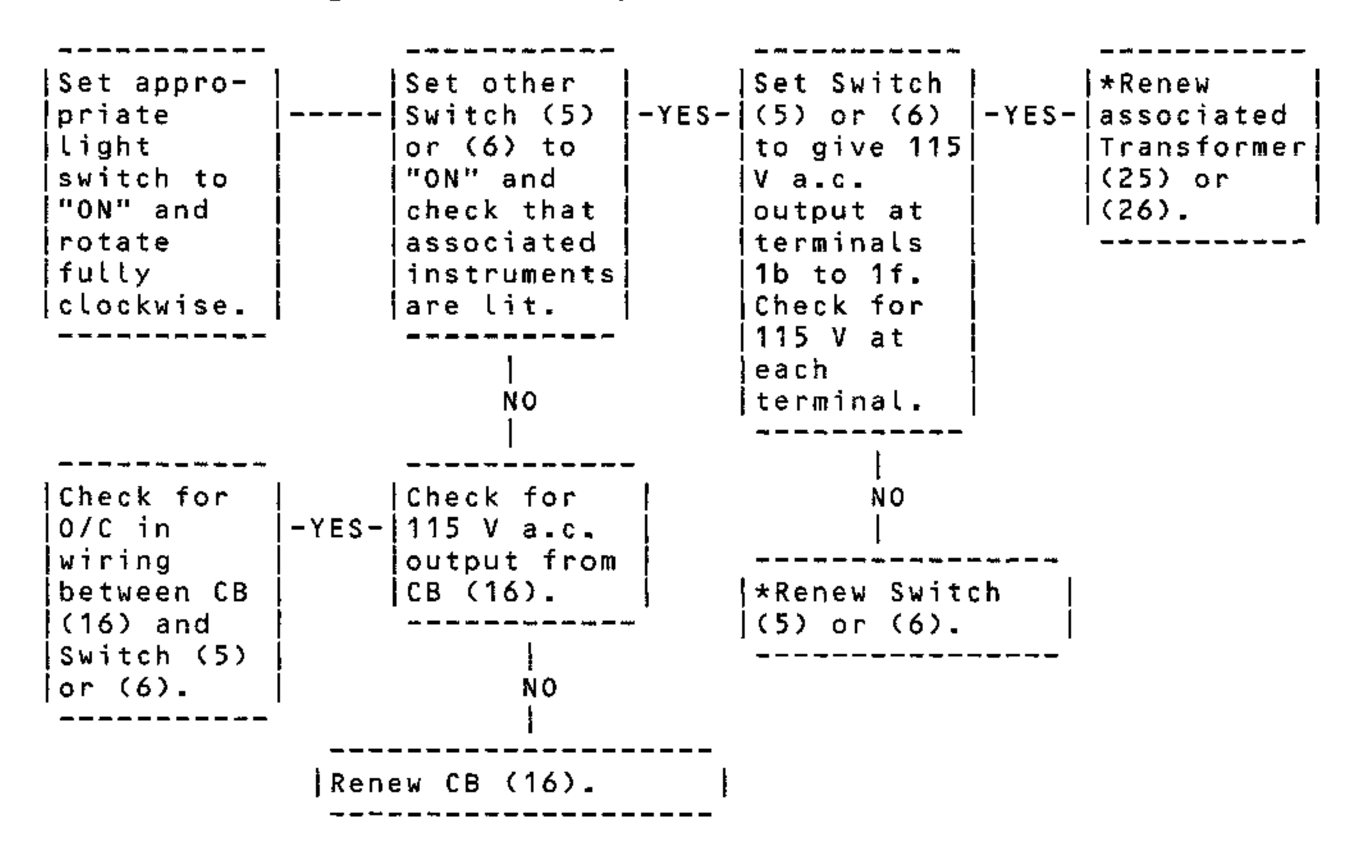


Chart 102

INSTRUMENTS ON LH CONSOLE, OXYGEN MASK STOWAGE OR JACK/ STATION BOX FILAMENTS NOT LIT WHEN ASSOCIATED SWITCH SET TO 'ON'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

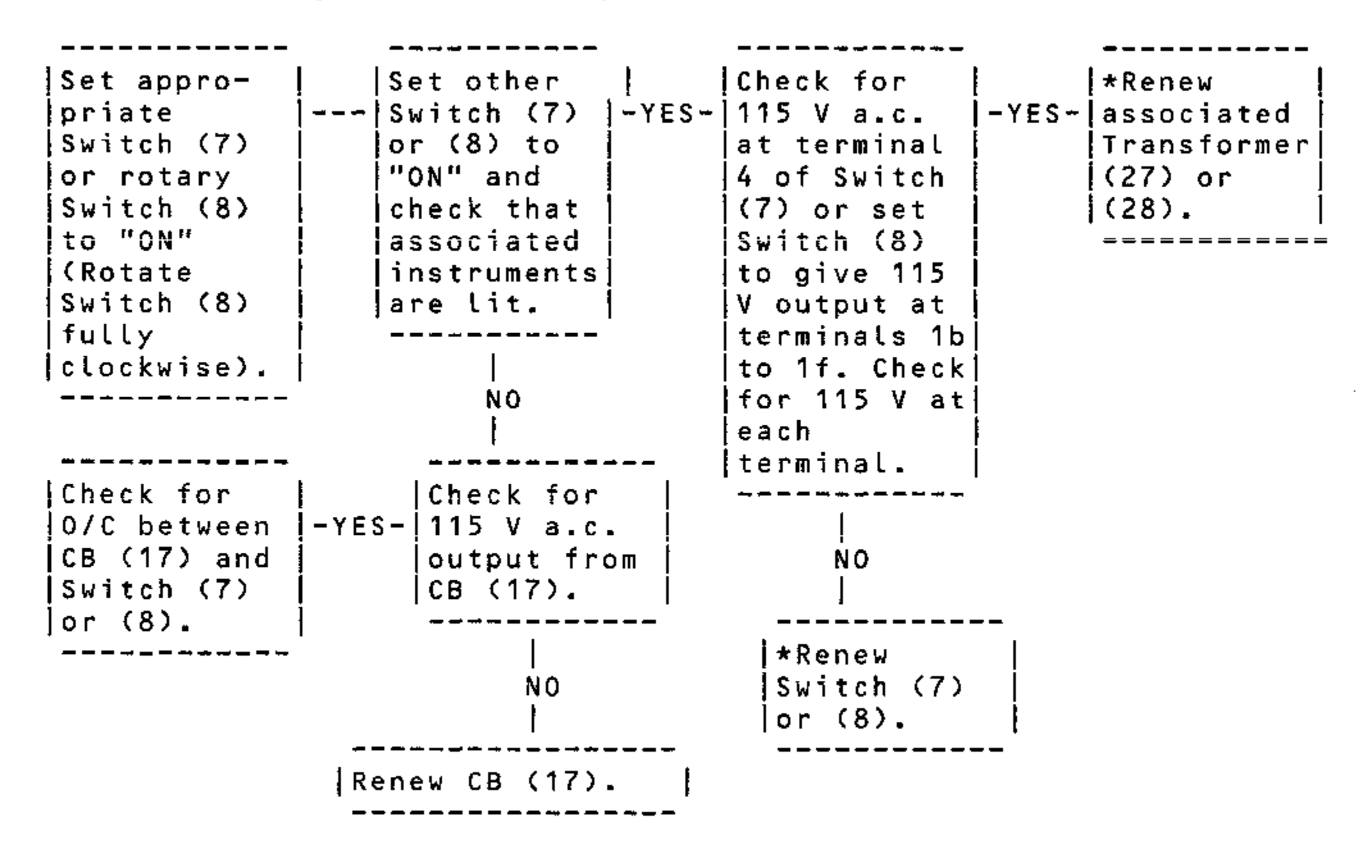


Chart 103

****
INSTRUMENTS ON RH CONSOLE AND
*OXYGEN MASK STOWAGE NOT LIT *
*WHEN SWITCH IS SET TO 'ON'. *
****

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

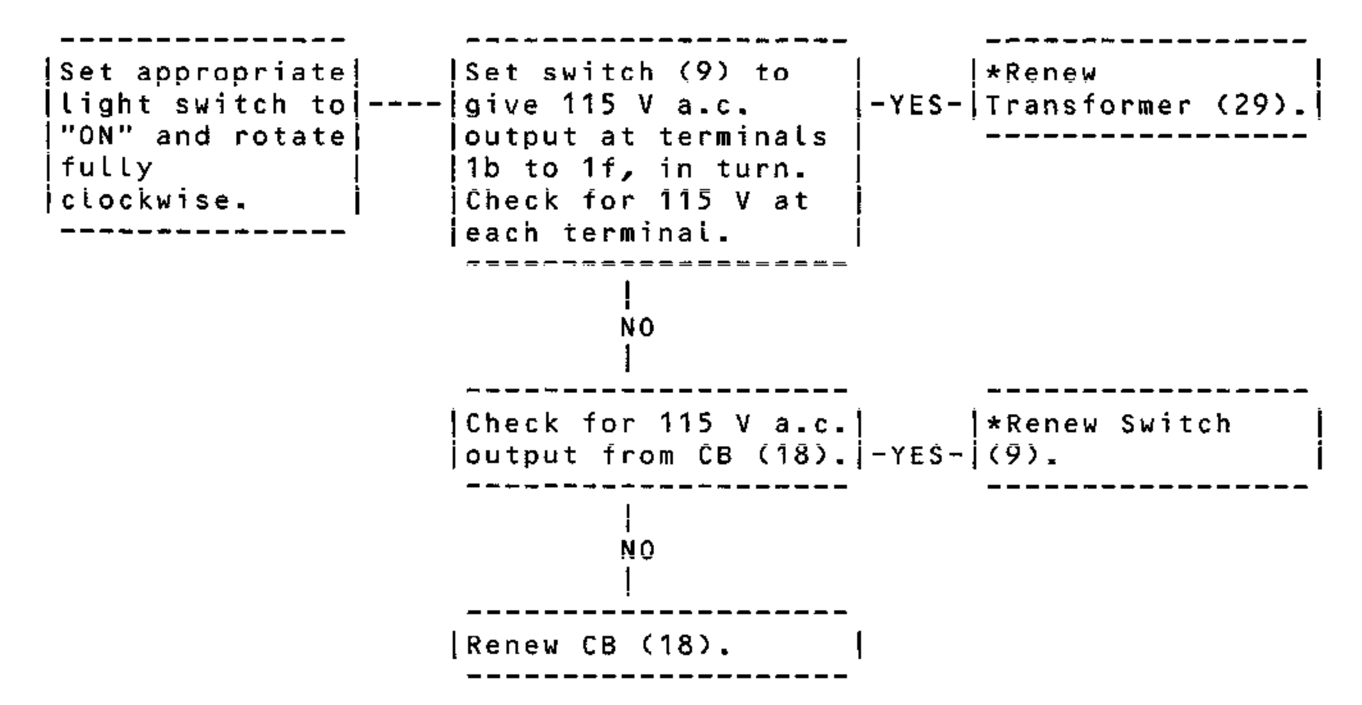


Chart 104

INSTRUMENTS AT 3CM STATION, RH, LH OR CENTRE AREAS NOT LIT WHEN SWITCH IS SET TO 'ON'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

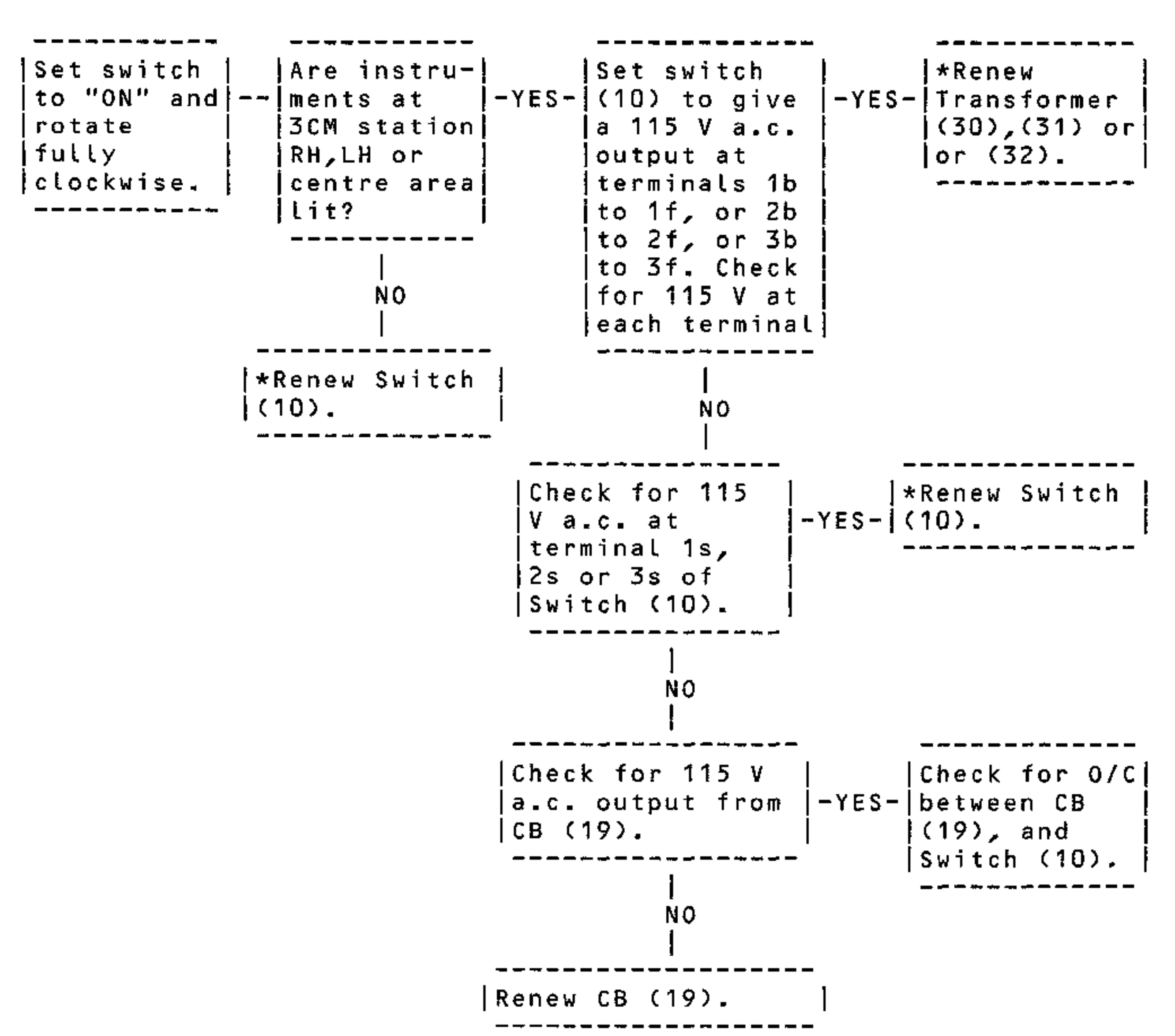


Chart 105

```
********************************
*STANDBY COMPASS NOT LIT WHEN *
*SWITCH IS SET TO 'BRIGHT' OR *
*'DIM'.                       *
********************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

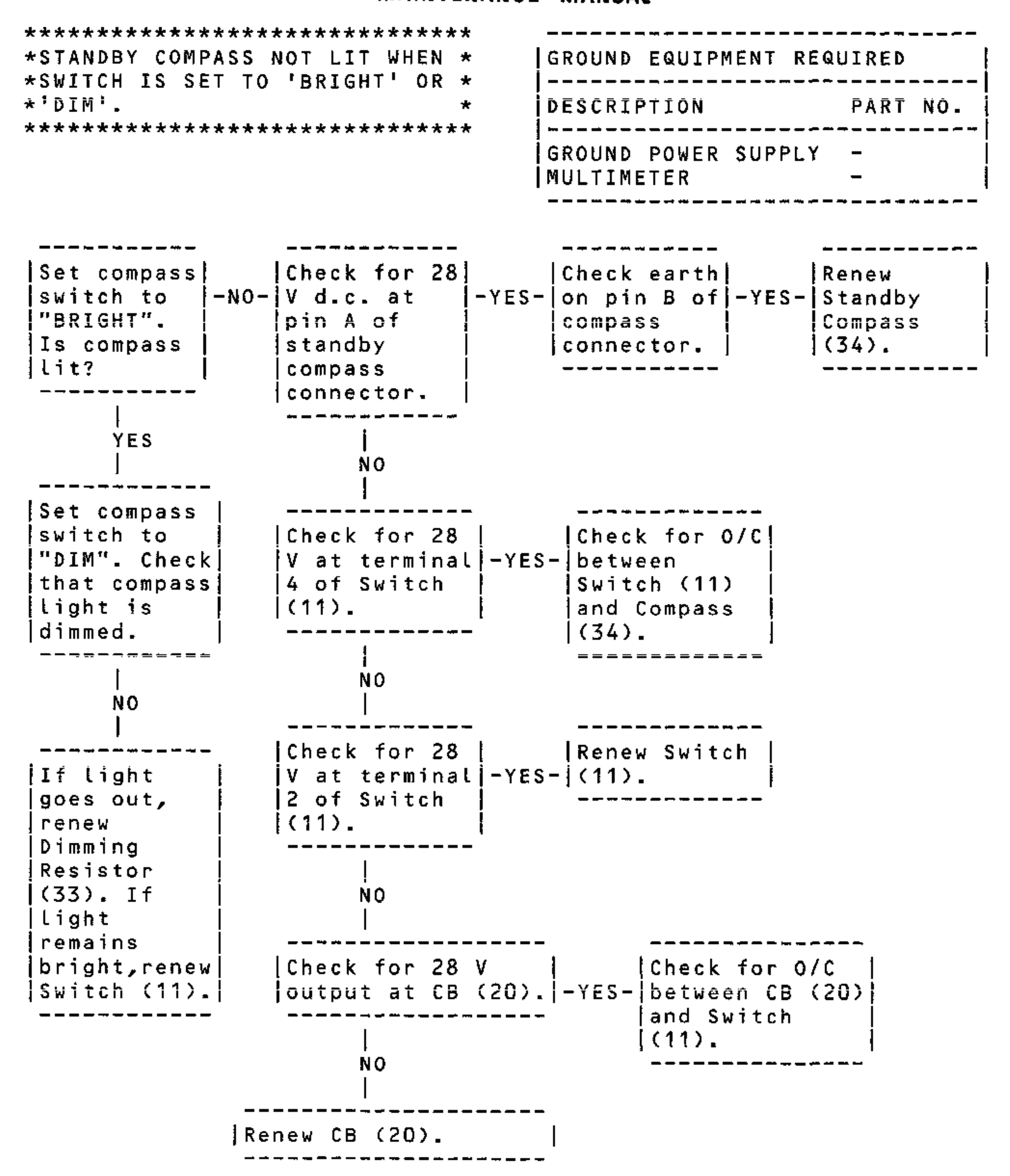


Chart 106

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Switch - LH DASH INSTRUMENTS	-	12-211	L382	LH switch panel	33-17-00 R/I	33-17-02
(2) Switch - RH DASH INSTRUMENTS	-	5-212	L381	RH switch panel	33-17-00 R/I	33-17-01
(3) Switch - CENTRE CONSOLE PANEL	-	4-211	L383	Roof panel	33-17-00 R/I	33-17-04
(4) Switch - ROOF	-	4-211	L384	Roof panel	33-17-00 R/I	33-17-06
(5) Switch - GLARESHIELD	-	4-211	L402	Roof panel	33-17-00 R/I	33-17-07
(6) Switch - CENTRE DASH	-	4-211	L401	Roof panel	33-17-00 R/I	33-17-03
(7) Switch - PANEL	-	3-213	L91	Circuit breaker panel	33-17-00 R/I	33-16-02
(8) Switch - SIDE CONSOLE	-	1-211 -2	L89	LH side console	33-17-00 R/I	33-16-13
(9) Switch - SIDE CONSOLE	-	1-212 -2	L90	RH side console	33-17-00 R/I	33-16-13
(10) Switch - PANEL	-	11-214	L385	Lighting control panel	33-17-00 R/I	33-17-05
(11) Switch - COMPASS	-	12-211	L400	Windscreen centre pillar	33-17-00 R/I	33-17-06
(12) Circuit breaker 115 V	-	13-215	L372	Map ref.A12	24-50-00 R/I	33-17-02
(13) Circuit breaker 115 V	-	13-216	L371	Map ref.E9	24-50-00 R/I	33-17-01

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(14) Circuit breaker 115 V	-	13-215	L379	Map ref.F11	24-50-00 R/I	33-17-06
(15) Circuit breaker 115 V	-	14-216	L405	Map ref.B8	24-50-00 R/I	33-17-04
(16) Circuit breaker 115 V	-	14-216	L375	Map ref.D10	24-50-00 R/I	33-17-03 33-17-07
(17) Circuit breaker 115 V	-	14-215	L374	Map ref.B11	24-50-00 R/I	33-17-04
(18) Circuit breaker 115 V	-	14-216	L373	Map ref.E8	24-50-00 R/I	33-17-04
(19) Circuit breaker 115 V	-	13-216	L377	Map ref.E7	24-50-00 R/I	33-17-05
(20) Circuit breaker 28 V	-	1-213	L380	Map ref.P22	24-50-00 R/I	33-17-06
(21) Instrument lights control transformer	-	10-211	L392	Dash panel support structure	33-17-11 R/I	33-17-02
(22) Instrument lights control transformer	-	10-211	L393	Dash panel support structure	33-17-11 R/I	33-17-01
(23) Instrument lights control transformer	-	10-211 -1	L403	Dash panel support structure	33-17-11 R/I	33-17-04
(24) Instrument lights control transformer	-	9-214	L394	3CM station secondary structure	33-17-11 R/I	33-17-06
(25) Instrument lights control transformer	-	10-211 -1	L404	Dash panel support structure	33-17-11 R/I	33-17-07
(26) Instrument lights control transformer	-	10-211 -1	L391	Dash panel support structure	33-17-11 R/I	33-17-03

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(27) Instrument lights control transformer	-	18-215	L388	Flight compartment LH racking	33-17-12 R/I	33-17-04
(28) Instrument lights control transformer	-	1-211	L389	LH console	33-17-12 R/I	33-17-04
(29) Instrument lights control transformer	-	1-212	L390	RH console	33-17-12 R/I	33-17-04
(30) Instrument lights control transformer	-	9-214	L395	3CM station secondary structure	33-17-11 R/I	33-17-05
(31) Instrument lights control transformer	-	9-214	L396	3CM station secondary structure	33-17-11 R/I	33-17-05
(32) Instrument lights control transformer	-	9-214	L397	3CM station secondary structure	33-17-11 R/I	33-17-05
(33) Dimming resistor	-	12-211	L407	Windscreen centre pillar	33-17-00 R/I	33-17-06
(34) Standby compass	-	15-211	F50	Windscreen centre pillar	Ref. Chap.34	34-25-11
Before SB 33-018						
(35) Circuit breaker 28 V	-	15-215	L1211	Map ref.G14	24-50-00 R/I	33-17-81
After SB 33-018		For A/C 001-004,				
(35) Circuit breaker 28 V	-	1-213	L1211	Map ref.R22	24-50-00 R/I	33-17-81

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(36) Circuit breaker 28 V	-	15-216	L1216	Map ref.A13	24-50-00 R/I	33-17-81
(37) Switch - DIGITS	-	1-211 -2	L1215	LH side console	33-10-00	33-17-81
(38) Switch - DIGITS	-	1-212 -2	L1220	RH side console	33-10-00	33-17-81

Component Identification
Table 101

R

INSTRUMENT LIGHTING - REMOVAL/INSTALLATION

1. General

Any faulty filament, integral to an instrument, necessitates the replacement of the instrument in which it is mounted. Instructions for the removal and installation of an instrument are detailed in the chapter dealing with the system in which the instrument occurs.

Instructions for the removal and installation of associated switches are detailed in 33-00-00 for switches on the pilots' roof panel and in 33-10-00 for switches on all other panels.

INSTRUMENT LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains an Operational Test only, which details the procedure to prove the correct operation of the integral lighting and digital display dimming, where appropriate, of the instruments in the flight compartment.

Functional and System Tests are not considered necessary in this application.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test

(1) Switch on each control switch listed in Table 501, in turn, and check that the associated instruments are illuminated. Ensure that each rotary control switch functions correctly throughout its travel.

SWITCH LOCATION	SWITCH ENGRAVING	LOCATION OF ILLUMINATED COMPONENTS
LH switch panel 12-211	COMPASS (toggle-switch)	Windscreen centre pillar
	LH DASH INSTRUMENTS	LH dash panel 2-211
RH switch panel 5-212	RH DASH INSTRUMENTS	RH dash panel 2-212
Roof panel 4-211	CENTRE CONSOLE PANEL	Aft centre console 9-211
		Forward centre console 7-211
	GLARESHIELD	Centre glareshield 5-211

SWITCH LOCATION	SWITCH ENGRAVING	LOCATION OF ILLUMINATED COMPONENTS
	CENTRE DASH	Centre dash panel 6-211
	ROOF	Roof panel 4-211
LH side console 1-211-2	SIDE CONSOLE	LH side console 1-211
	DIGITS	LH dash panel
		Centre glareshield
RH side console 1-212-2	SIDE CONSOLE	RH side console 1-212
	DIGITS	RH dash panel
		Centre glareshield
Circuit breaker panel 3-213	PANEL (toggle-switch)	Headset jack box 7-213
		Station box 7-213
		Headset jack box 20-215
Lighting control panel 11-214	PANEL	3rd crew member's station, zone 214 -
		RH panels
		Centre panels
		LH panels

Instrument Lighting
Table 501

(2) Return all control switches to the 'off' position and check that all instrument integral lighting is extinguished.

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

100 VA and 200 VA TRANSFORMERS - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

Six 100 VA transformers and three 200 VA transformers are associated with the instrument lighting system.

Five 100 VA transformers are mounted on the dashboard support structure behind the centre dash panel 6-211 and supply power for the integral lighting of components on the centre console, centre glareshield, and the centre, left and right dash panels. One 100 VA transformer is installed at the rear of the forward leg of the third crew member's (3CM) station, zone 214, and supplies power for the integral lighting of components on the roof panel.

Two 200 VA transformers are installed at the rear of the aft leg of the 3CM station and one at the rear of the forward leg; these transformers supply power for the integral lighting of components on the left, centre and right panels of the 3CM station.

Each transformer is secured to a mounting plate by screws entering the body of the transformer from the reverse side of the plate. Electrical connections are made at terminals on top of each transformer.

2. Centre Console, Centre Dash Panels and Glareshield Instrument Lights 100 VA Transformers

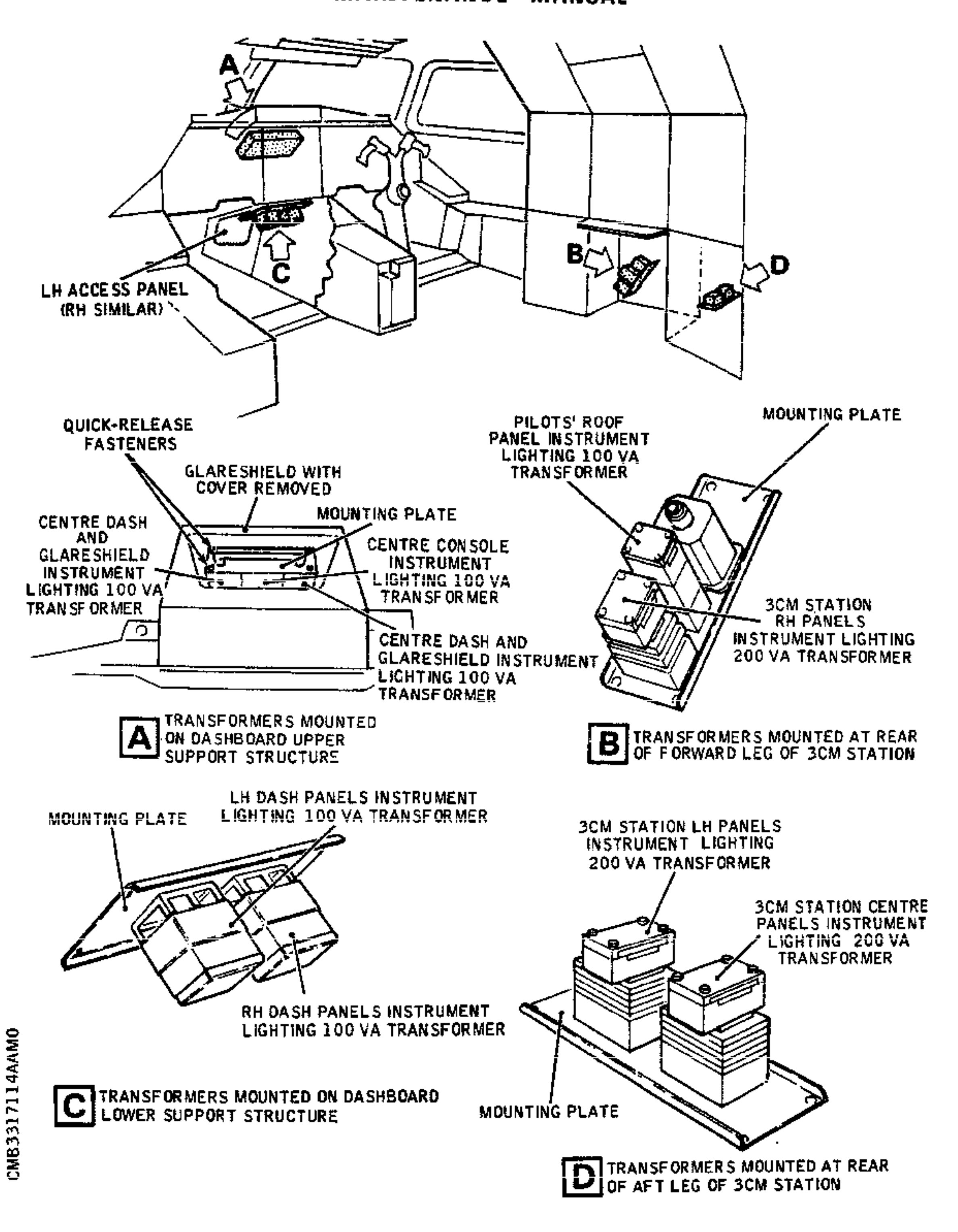
A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the GLARESHIELD, CENTRE CONSOLE and CENTRE DASH rotary lighting control switches on the flight compartment roof panel are at OFF.

(2) Trip the CENTRE DASH & G/SHIELD INST LTS SUP and the CENTRE CONSOLE INST LTS SUP circuit breakers,



- 100 VA and 200 VA Transformer - Installation
Figure 401

R L375 and L405, on panel 14-216, map refs.D10 and
R B8, and fit safety clips.

(3) Gain access to the transformers on the dashboard upper support structure by removing the cover from the top of the centre glareshield.

C. Remove

(1) Disconnect each of the transformer electrical connectors from the associated connectors on the dashboard structure.

(2) Release the four quick-release fasteners securing the transformer mounting plate to its support bracket.

(3) Using the lifting handle, withdraw the mounting plate, with the three transformers attached, clear of the structure.

(4) Remove the terminal cover from the appropriate transformer and disconnect the cables from the terminals.

(5) Refit the terminal cover.

(6) Cut the locking wire, remove the transformer securing screws and washers from the reverse side of the mounting plate and remove the transformer.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the transformer to the mounting plate and secure it with the screws and washers. Wire-lock the securing screws in accordance with 20-21-13.

(3) Remove the terminal cover from the transformer.

(4) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identification and the applicable wiring diagram.

(5) Refit the terminal cover.

(6) Fit the transformer mounting plate to its bracket on the dashboard upper support structure and secure it with the quick-release fasteners.

(7) Connect each of the three transformer electrical connectors to their associated connectors on the dashboard structure, ensuring that the mating surfaces are clean and undamaged.

(8) Check that the transformer is bonded in accordance with 20-27-11.

E. Conclusion

(1) Remove the safety clips and reset the circuit breakers tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Switch on the GLARESHIELD, the CENTRE DASH and the CENTRE CONSOLE integral lighting control switches on the flight compartment roof panel. Check that the integral filaments of components on the glareshield, the centre dash and the centre console are lit.

(4) Rotate each switch in turn, and check that the associated lights vary in brightness.

(5) Set the control switches to "OFF".

(6) Refit the cover to the top of the centre glareshield.

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Right and Left Dash Panels Instrument Lights 100 VA Transformers

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the LH DASH INSTRUMENTS and the RH DASH INSTRUMENTS lighting control switches on the left and right switch panels, respectively, are at

OFF.

R (2) Trip the RH DASH INST LTS SUP circuit breaker,
R L371, on panel 13-216, map ref.E9, and the LH
R DASH INST LTS SUP circuit breaker, L372, on
R panel 13-215, map ref.A12, and fit safety clips.

(3) Gain access to the transformers on the dashboard lower support structure by removing the access panels from the left and right sides of the dashboard structure.

C. Remove

(1) Remove the screws and washers securing the transformer mounting plate to its support brackets and lower the mounting plate to the extent of the transformer electrical cables.

(2) Remove the terminal cover from the appropriate transformer and disconnect the cables from the terminals.

(3) Refit the terminal cover.

(4) Cut the locking wire and remove the transformer securing screws and washers from the reverse side of the mounting plate. Remove the transformer from the mounting plate.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the transformer to the mounting plate and secure it with the screws and washers. Wire-lock the securing screws in accordance with 20-21-13.

(3) Remove the terminal cover from the transformer.

(4) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identification and the applicable wiring diagram.

(5) Refit the terminal cover.

(6) Fit the transformer mounting plate to its support brackets and secure it with the screws and washers.

(7) Check that the transformer is bonded in accordance

with 20-27-11.

E. Conclusion

(1) Remove the safety clips and reset the circuit breakers tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Switch on the LH or RH DASH INSTRUMENTS switches on the left or right switch panels, as appropriate, and check that the integral filaments of components on the left or right dash panels are lit.

(4) Rotate the switch and check that the associated lights vary in brightness.

(5) Set the control switch to "OFF".

(6) Fit the access panels to the left and right sides of the dashboard structure.

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

4. Roof Panel Instrument Lights 100 VA Transformer, and 3CM Station (RH Panels) Instrument Lights 200 VA Transformer

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the ROOF lighting control switch on the flight compartment roof panel and the PANEL lighting control switch on the lighting control panel, 11-214, at the 3CM station, are at OFF.

(2) Trip the ROOF PNL INST LTS SUP circuit breaker, L379, on panel 13-215, map ref.F11, and the
R 3CM STN INST LTS SUP circuit breaker, L377,
R on panel 13-216, map ref.E7, and fit safety clips.

R (3) Trip circuit breaker F56, labelled 2ND PLT 3CM CLOCK

R TIME BASE - BAT SUP, on panel 16-216 and fit a safety
R clip (Ref. 31-21-12).

(4) Remove the upper fairing panel from the forward end of the 3CM station.

C. Remove

(1) Remove the screws securing the transformer mounting plate to the support brackets of the 3CM station structure and withdraw the plate and transformers.

(2) Remove the terminal cover from the appropriate transformer and disconnect the cables from the terminals.

(3) Refit the terminal cover.

(4) Remove the appropriate transformer securing screws and washers from the reverse side of the mounting plate and remove the transformer from the plate.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the transformer to the mounting plate and secure it with the screws and washers.

(3) Remove the terminal cover from the transformer.

(4) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identification and the applicable wiring diagram.

(5) Refit the terminal cover.

(6) Fit the transformer mounting plate to its support bracket and secure it with the screws.

(7) Check that the transformer is bonded in accordance with 20-27-11.

E. Conclusion

(1) Remove the safety clips and reset the circuit breakers tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Switch on the ROOF lighting control switch on the flight compartment roof panel or the PANEL lighting control switch on the lighting control panel 11-214, as appropriate, and check that the integral filaments of associated components are lit.

(4) Rotate the switch and check that the associated lights vary in brightness.

(5) Set the control switch to "OFF".

(6) Fit the upper fairing panel to the forward end of the 3CM station.

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

(8) Reset the three clocks to GMT (Ref. 31-21-00).

5. 3CM Centre and LH Instrument Lights 200 VA Transformers

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the PANEL lighting control switch on lighting control panel 11-214 at the 3CM station is at OFF.

R (2) Trip the 3CM STN INST LTS SUP circuit breaker,
R L377, on panel 13-216, map ref.E7, and fit a safety clip.

(3) At the 3CM station, slide the table inward to its full extent.

(4) Remove the sliding stowage box from its housing in the 3CM station knee-hole recess (Ref. 25-13-00) to gain access to the transformers in the aft leg of the 3CM station secondary structure.

C. Remove

(1) Remove the screws securing the transformer mounting

plate to its support brackets and withdraw the plate and transformers.

(2) Remove the terminal cover from the appropriate transformer and disconnect the cables from the terminals.

(3) Refit the terminal cover.

(4) Remove the transformer securing screws and washers from the reverse side of the transformer mounting plate. Remove the transformer from the mounting plate.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the transformer to the mounting plate and secure it with the screws and washers.

(3) Remove the terminal cover from the transformer.

(4) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identification and the applicable wiring diagram.

(5) Refit the terminal cover.

(6) Fit the transformer mounting plate to its support brackets and secure it with the screws.

(7) Check that the transformer is bonded in accordance with 20-27-11.

E. Conclusion

(1) Remove the safety clips and reset the circuit breakers tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Switch on the PANEL lighting control switch on lighting control panel 11-214. Check that the integral filaments of associated components are lit.

(4) Rotate the switch and check that the lights vary in brightness.

(5) Set the control switch to "OFF".

(6) Refit the sliding stowage box into its housing in the 3CM station knee-hole recess (Ref. 25-13-00) and withdraw the table to its full extent.

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

50 VA TRANSFORMER - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

Three 50 VA transformers are associated with the instrument lighting system. One transformer is mounted in the left console, panel 1-211, and one in the right console, panel 1-212, each transformer supplying power for the integral lighting of components on its associated console.

The third transformer is mounted on the rear face of the forward wall of the flight compartment left-hand racking, zone 215, and supplies power for the integral lighting of components on the left-hand racking.

Each transformer is secured to a mounting plate/bracket by screws entering the transformer from the reverse side of the plate/bracket. Electrical connections are made at terminals on top of each transformer, the terminals being protected by a terminal cover.

2. 50 VA Transformer

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the appropriate SIDE CONSOLE rotary switch on the left or right console, or the PANEL toggle-switch on panel 3-213 is at OFF.

(2) Trip the associated circuit breaker listed below, and fit a safety clip.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH CONSOLE INST LTS SUP	14-215	L374	B11

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R RH CONSOLE INST R LTS SUP	14-216	L373	E8

C. Remove Transformer from Left Console

(1) Gain access to the transformer in the left console by removing the cover plate from the inboard side of the console structure.

(2) Remove the transformer terminal cover and disconnect the cables from the terminals.

(3) Refit the terminal cover.

(4) Remove the two screws securing the top of the transformer mounting plate to the upper support bracket.

(5) Ease the mounting plate with attached transformer upwards sufficiently to disengage the mounting plate spigots from the lower support bracket. Withdraw the mounting plate and transformer clear of the console.

(6) Remove the screws and washers securing the transformer to the mounting plate.

D. Install Transformer in Left Console

(1) Comply with the electrical safety precautions.

(2) Support the transformer on its mounting plate and secure it with the screws and washers.

(3) Engage the mounting plate spigots in their housings in the lower support bracket within the console. Press the mounting plate down to secure the bottom end.

(4) Secure the upper end of the mounting plate to the upper support bracket with the screws and washers.

(5) Check that the transformer is bonded in accordance

with 20-27-11.

(6) Remove the terminal cover from the transformer.

(7) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identification and the applicable wiring diagram.

(8) Refit the terminal cover.

(9) Refit the cover plate to the side of the console.

E. Conclusion

(1) Remove the safety clip and reset the associated circuit breaker.

(2) Make available electrical ground power as detailed in 24-21-00.

(3) Switch on the SIDE CONSOLE rotary switch on the left side console and check that the integral filaments of components on the left side console, panel 1-211, are lit. Rotate the switch and check that the lights vary in brightness.

(4) Set the switch to "OFF".

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

F. Remove Transformer from Right Console

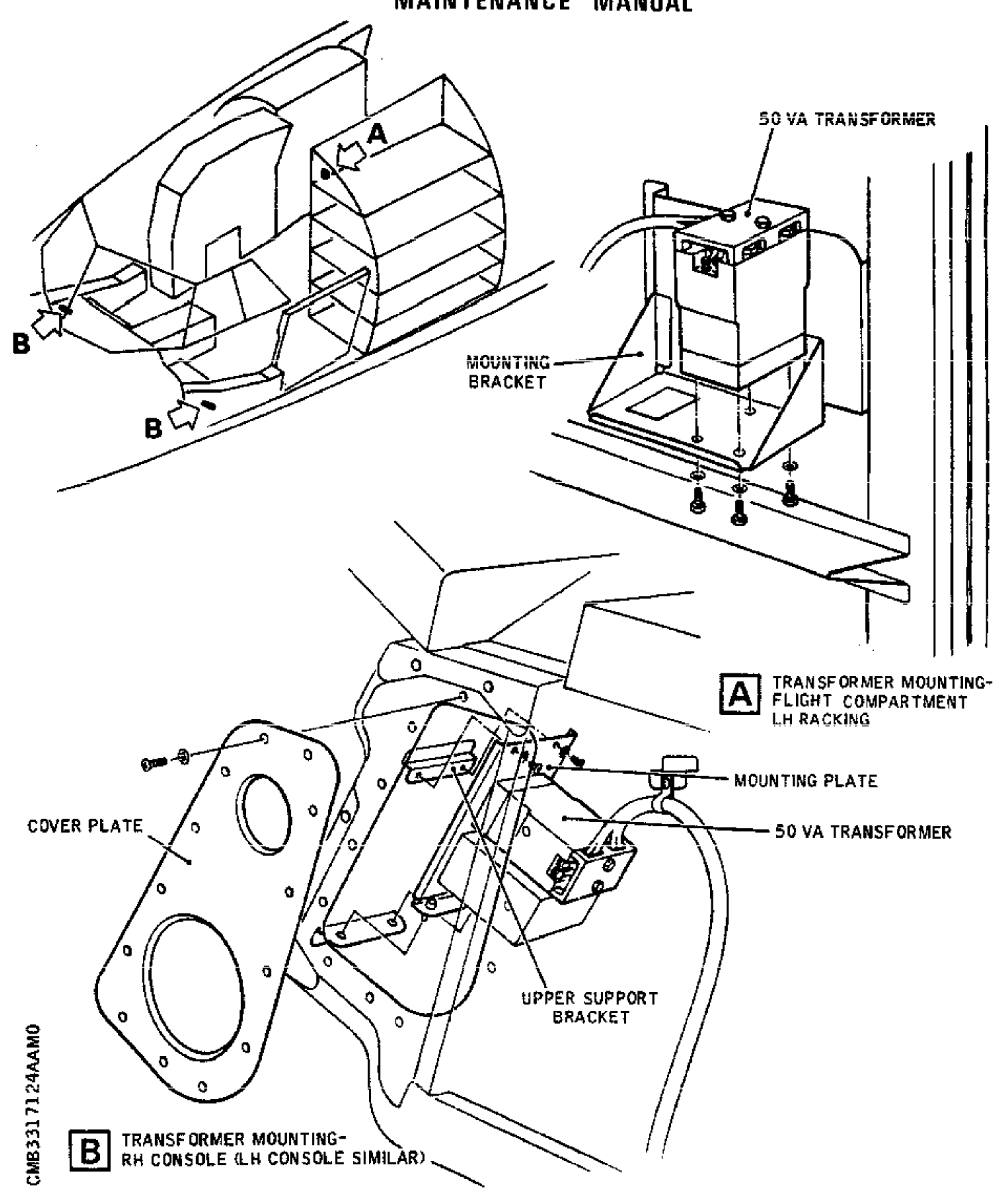
(1) Gain access to the transformer in the right console by removing the cover plate from the inboard side of the console structure.

(2) Remove the terminal cover from the uppermost transformer on the transformer mounting plate and disconnect the cables from the terminals.

(3) Refit the terminal cover.

(4) Remove the two screws securing the transformer mounting plate to the upper support bracket.

(5) Ease the mounting plate with the attached transformers upwards sufficiently to disengage the mounting plate spigots from the lower support bracket.



- 50 VA Transformer - Installation
Figure 401

(6) Remove the screws and washers securing the transformer to the mounting plate and withdraw the transformer from the console.

G. Install Transformer in Right Console

(1) Comply with the electrical safety precautions.

(2) Support the transformer on its mounting plate and secure it with the screws and washers.

(3) Engage the mounting plate spigots in their housings in the lower support bracket and press the mounting plate down to secure the bottom end.

(4) Secure the upper end of the mounting plate to the upper support bracket with the screws and washers.

(5) Check that the transformer is bonded in accordance with 20-27-11.

(6) Remove the terminal cover from the transformer.

(7) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identification and the applicable wiring diagram.

(8) Refit the terminal cover.

(9) Refit the cover plate to the side of the console.

H. Conclusion

(1) Remove the safety clip and reset the associated circuit breaker.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Switch on the SIDE CONSOLE rotary switch on the right side console and check that the integral filaments of components on the right side console, panel 1-212, are lit. Rotate the switch and check that the lights vary in brightness.

(4) Set the switch to "OFF".

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

I. Remove Transformer from Flight Compartment LH Racking

(1) Gain access to the transformer on the rear face of the forward wall of the flight compartment LH racking, by removing the appropriate cover from the front of the racking.

(2) Remove the transformer terminal cover and disconnect the cables from the terminals.

(3) Refit the terminal cover.

(4) Remove the screws and washers securing the transformer to the mounting bracket and lift the transformer clear of the racking.

J. Install Transformer in Flight Compartment LH Racking

(1) Comply with the electrical safety precautions.

(2) Place the transformer on its mounting bracket, on the rear face of the forward wall of the flight compartment LH racking, and secure it with the screws and washers.

(3) Check that the transformer is bonded in accordance with 20-27-11.

(4) Remove the terminal cover from the transformer.

(5) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identification and the applicable wiring diagram.

(6) Refit the terminal cover.

(7) Refit the cover to the racking.

K. Conclusion

(1) Remove the safety clip and reset the associated circuit breaker.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Switch on the PANEL toggle-switch on circuit breaker panel, 3-213, and check that the integral filaments of the headset jack box and station box at panel 7-213, and the headset jack box at panel 20-215, are

lit.

(4) Set the PANEL switch to "OFF".

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

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END OF THIS SECTION

NEXT

PASSENGER COMPARTMENTS - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig.401 and 402)

This topic contains general instructions for the removal and installation of minor electrical components, e.g., toggle switches, indicator lamp/switches, push-switches, indicator lamps, circuit breakers, and transformers, that are fitted to panels common to sub-systems of 30-20-00 (Passenger Compartments). These panels are as follows:-

Forward steward's call panel (2-221)

Forward steward's control panel (1-221)

Centre steward's control panel (1-223)

Rear steward's control panel (1-241)

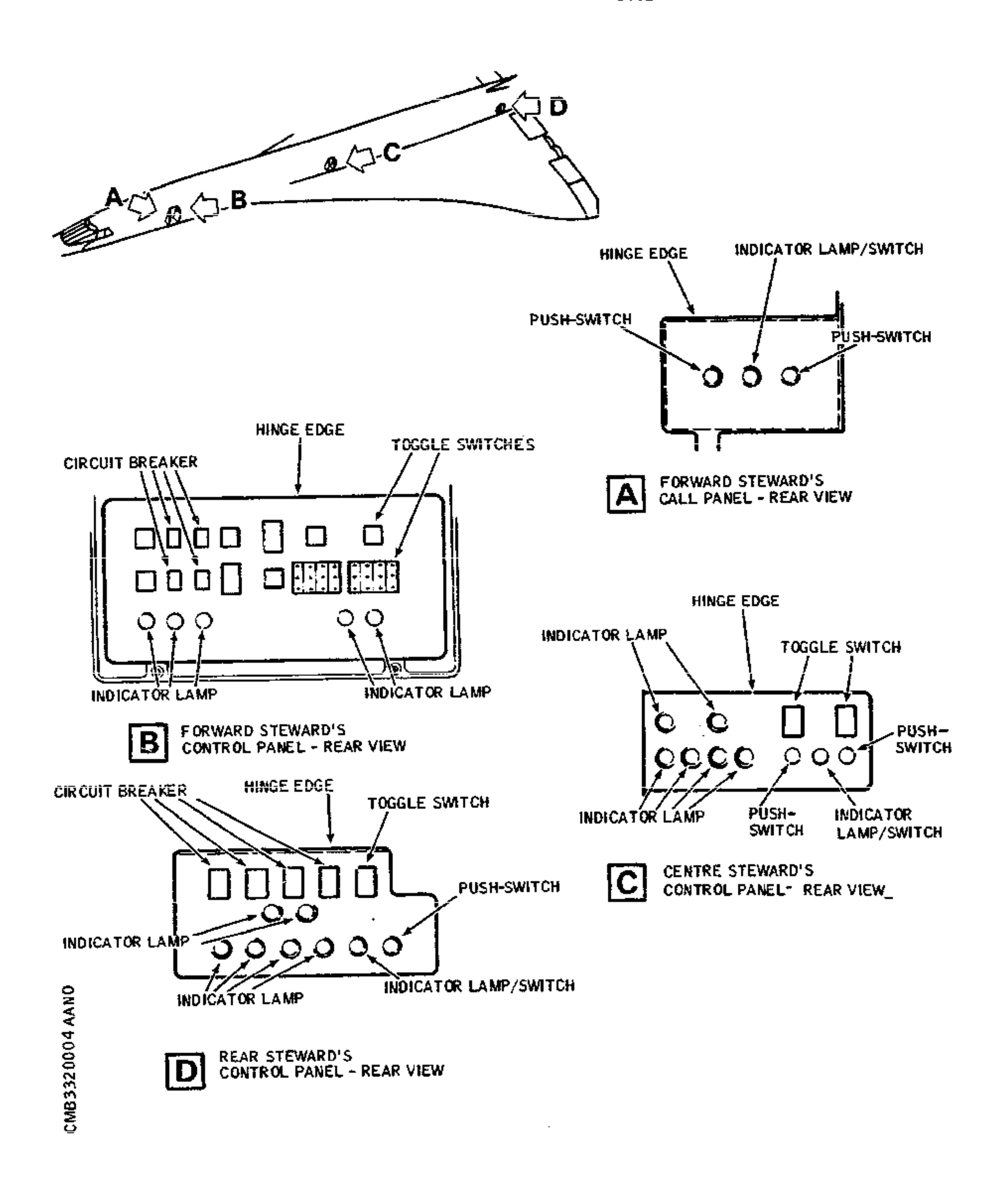
Access to components on each panel is gained by releasing the quick-release fasteners and lowering the front of the panel on its hinges to the extent of the tie-cord. Access to components on the top section of the rear steward's control panel is gained by unscrewing the upper panel and withdrawing it from its mounting.
The box which houses the forward steward's control panel accommodates reading light transformers (Ref. 33-24-00) and plug-in relays associated with main lighting (Ref. 33-21-00) and call systems (Ref. 33-27-00). The box behind the centre steward's control panel houses plug-in relays associated with call systems only. Two reading light transformers are mounted in the upper section of the rear steward's control panel on the rear of a mounting panel.

All toggle switches, indicator lamp/switches, push-switches and circuit breakers are mounted from the rear of the associated panel, and all indicator lamps from the front.

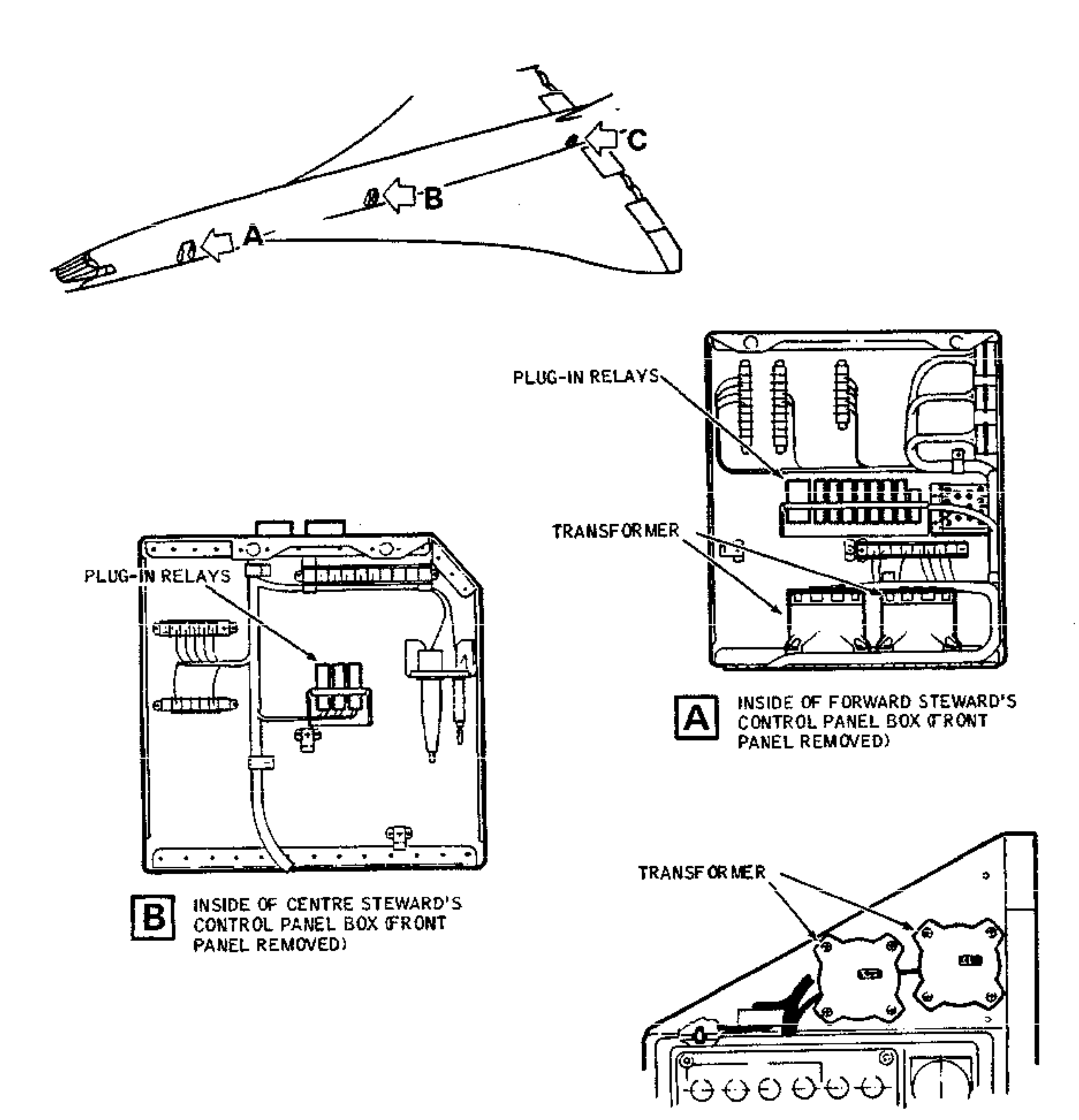
Electrical connections to indicator lamp/switches, push-switches, indicator lamps and transformers are made to screw-type terminals, and to toggle switches by screw-type or socket-type terminals.

2. Steward's Panel Components (Ref. Fig. 403)

A. Equipment and Materials



Minor Electrical Components -
Mounted on Steward's Panels
Figure 401



\- Minor Electrical Components -
Mounted behind Steward's Panels
Figure 402

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Carry out the following isolation procedures, as appropriate:-

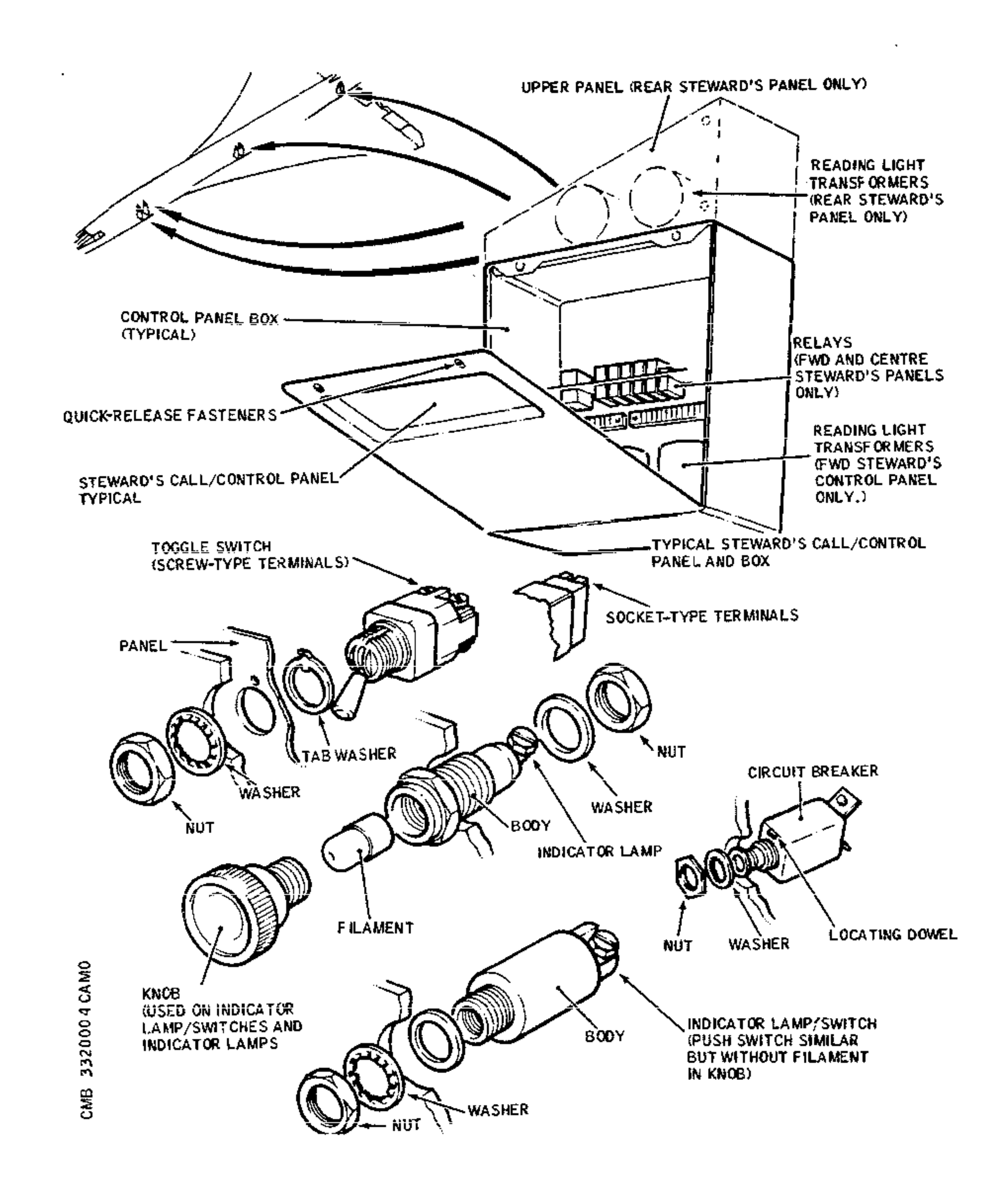
(a) For components on the forward steward's call panel, trip the PASS CALL SUP circuit breaker, M78, on panel 15-216, map ref.A22, and fit a safety clip.

(b) For components on the forward steward's control panel, isolate the electrical generation and external power equipment as detailed in 24-00-00, Servicing.

(c) For components on the centre steward's control panel, trip all circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
PASS CALL SUP	15-216	M78	A22
FASTEN S/BLTS SUP	1-213	W191	L8
NO SMOKING SUP	1-213	W192	L9
VESTIBULE & BOARDING LTS SUP	25-216	L692	C1
CABIN NIGHT LTS SUP	5-213	L455	D19
FLT DECK ROOF LTS SUP	14-215	L232	C11

(d) For components on the rear steward's control panel, trip all circuit breakers listed below and fit safety clips.



- Minor Electrical Components - Installation
Figure 403

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
PASS CALL SUP	15-216	M78	A22
FASTEN S/BLTS SUP	1-213	W191	L8
NO SMOKING SUP	1-213	W192	L9
CABIN NIGHT LTS SUP	5-213	L455	D19
FLT DECK ROOF LTS SUP	14-215	L232	C11

(e) For components on the upper section of the rear steward's control panel, trip the LH and RH AFT PASS RDG LTS TRANS SUP circuit breakers L886 and L887 on panel 13-215, map refs.E11 and E12, and fit safety clips.

(2) Release the quick-release fasteners and lower the appropriate steward's panel on its hinges, or remove the rear steward's upper panel from its mounting, as applicable.

C. Remove Toggle Switch

(1) On a switch with screw-type terminals, disconnect the electrical cables from the switch. On a switch with socket-type terminals, using a suitable tool, withdraw the pin inserts.

(2) Using a suitable spanner, remove the nut and washer from the front of the panel and withdraw the switch and tabwasher from the rear.

NOTE: Some large switches are fitted with a tabwasher at the front and rear of the panel.

D. Install Toggle Switch

(1) Comply with the electrical safety precautions.

(2) Position the tabwasher on the switch and insert the switch through the aperture from the rear of the panel, ensuring that the tab on the tabwasher engages the locating hole in the panel.

(3) If applicable, fit another tabwasher to the switch from the front of the panel, ensuring that the tab engages the locating hole in the panel. Secure the switch with the nut and washer.

(4) Connect the electrical cables to the switch, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

E. Remove Indicator Lamp/Switch or Push-switch

(1) Unscrew the knob from the indicator lamp/switch or push-switch. Using a tubular spanner, remove the nut and washer from the front of the panel.
R Where applicable, remove the switch guard.

(2) Disconnect the electrical cables from the indicator lamp/switch and withdraw the switch from the rear of the panel.

F. Install Indicator Lamp/Switch or Push-switch

(1) Comply with the electrical safety precautions.

(2) Insert the indicator lamp/switch or push-switch
R through the aperture from the rear of the panel.
R From the front, refit the switch guard, where
R applicable, and secure the switch and guard,
R friction-tight, with the nut and washer.

(3) Orientate the switch body as required, and connect the electrical cables to the switch, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Tighten the securing nut. Ensure that the lamp/switch knob contains a filament, then refit the knob to the switch.

G. Remove Indicator Lamp

(1) Unscrew the knob from the indicator lamp.

(2) Disconnect the electrical cable from the screw

terminal.

(3) Using a tubular spanner, remove the nut and washer from the rear of the panel and withdraw the electrical cable tags from the body of the indicator lamp.

(4) Withdraw the indicator lamp from the front of the panel.

H. Install Indicator Lamp

(1) Comply with the electrical safety precautions.

(2) Insert the indicator lamp through the aperture from the front of the panel and fit the electrical cable tags over the lamp body from the rear.

(3) Secure the indicator lamp with the nut and washer.

(4) Connect the electrical cable to the indicator lamp terminal.

(5) Ensure that the indicator lamp knob contains a filament, then refit the knob to the lamp.

I. Remove Reading Light Circuit Breaker

(1) Disconnect the electrical cables from the circuit breaker terminal lugs.

(2) Using a tubular spanner, remove the nut and washer from the front of the panel and withdraw the circuit breaker from the rear of the panel.

J. Install Reading Light Circuit Breaker

(1) Comply with the electrical safety precautions.

(2) Insert the circuit breaker through the aperture from the rear of the panel, ensuring that the locating dowel on the circuit breaker body engages the hole in the panel.

(3) Secure the circuit breaker with the nut and washer.

(3) Connect the electrical cables to the circuit breaker, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

K. Remove Plug-in Relay

CAUTION: SOME RELAYS ARE PHYSICALLY INTERCHANGEABLE BUT ARE NOT ELECTRICALLY INTERCHANGEABLE. DURING RELAY REPLACEMENT ENSURE THAT THE CORRECT RELAY IS FITTED TO THE APPROPRIATE SOCKET.

(1) Remove the nuts and washers securing the relay to the relay socket.

(2) Withdraw the relay from its socket.

L. Install Plug-in Relay

(1) Comply with the electrical safety precautions.

(2) Fit the relay into its socket, ensuring that the locating pin on the relay body engages the hole in the socket.

(3) Secure the relay with the nuts and washers.

M. Remove Transformer

(1) Remove the terminal cover from the transformer and disconnect the cables from the terminals.

(2) Refit the terminal cover.

(3) Remove the bolts and washers securing the transformer to its mounting plate and remove the transformer from its mounting.

N. Install Transformer

(1) Comply with the electrical safety precautions.

(2) Fit the transformer to its mounting and secure it with the bolts and washers.

(3) Remove the terminal cover.

(4) Connect the electrical cable to the terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(5) Refit the terminal cover.

(6) Check that the transformer is bonded in accordance

with 20-27-11.

O. Conclusion

(1) Close and secure the appropriate steward's panel, or refit the upper section of the rear steward's panel to its mounting as applicable.

(2) Remove the safety clips and reset the associated circuit breakers tripped before removal and make available electrical ground power as detailed in 24-41-00, as applicable.

(3) Check the operation of the component(s) by carrying out the appropriate test procedures.

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

MAIN LIGHTING - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

The main cabin lighting is provided by fluorescent tubes forming a continuous strip at ceiling level along each side of both cabins, and a fluorescent tube over each window. Filament lamps spaced at intervals along the ceiling strips provide 'dim' or 'night' lighting.

Separate FWD and AFT (BRIGHT - DIM - OFF) switches on the forward steward's control panel provide primary control of the associated cabin fluorescent and filament lighting. Secondary control of the forward and rear cabin fluorescent lighting is provided by separate FWD and AFT (FULL - ROOF - WALL)switches on the forward steward's control panel.

The filaments in both cabins are lit automatically if the aircraft 115 V a.c. fails or when the NO SMKG switch (Ref. 33-25-00 and 33-51-00) is set to ON.

2. Roof Lamp Assembly (Ref. Fig. 002)

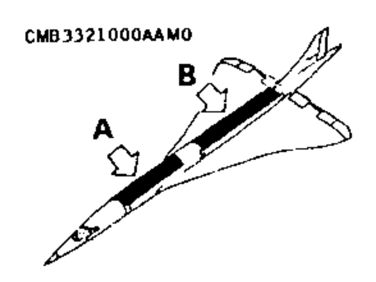
Each roof lamp assembly comprises two fluorescent tubes, a 28 V filament lamp, and ballast units mounted on the upper section of a service panel located behind a luggage bin. A light lens above the luggage bin, secured to the service panel by screws, directs light from the tubes and filament into the passenger cabin. A lamp access panel with a reflector fitted on the inside, and forming part of the cabin decor on the outside, is hinged to the service panel and retained in the closed position by slide catches which engage the bottom edge of the light lens. The hinged access panel facilitates component replacement.

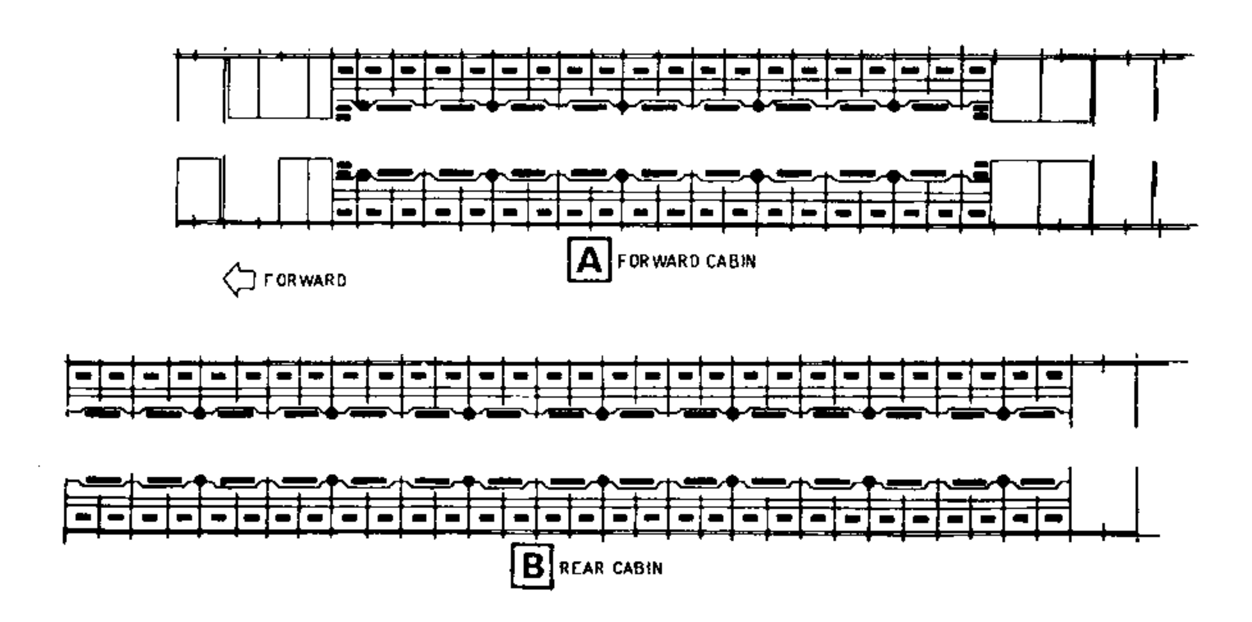
3. Wall Lamp Assembly (Ref. Fig. 002)

Each wall lamp assembly comprises four fluorescent tubes and a reflector mounted on the lower section of a service panel fitted behind a luggage bin. Each fluorescent tube is positioned over a window, and the four tubes are concealed by an air vane and fairing assembly, the interior surface of which directs light from the tubes to the wall below the luggage bins.

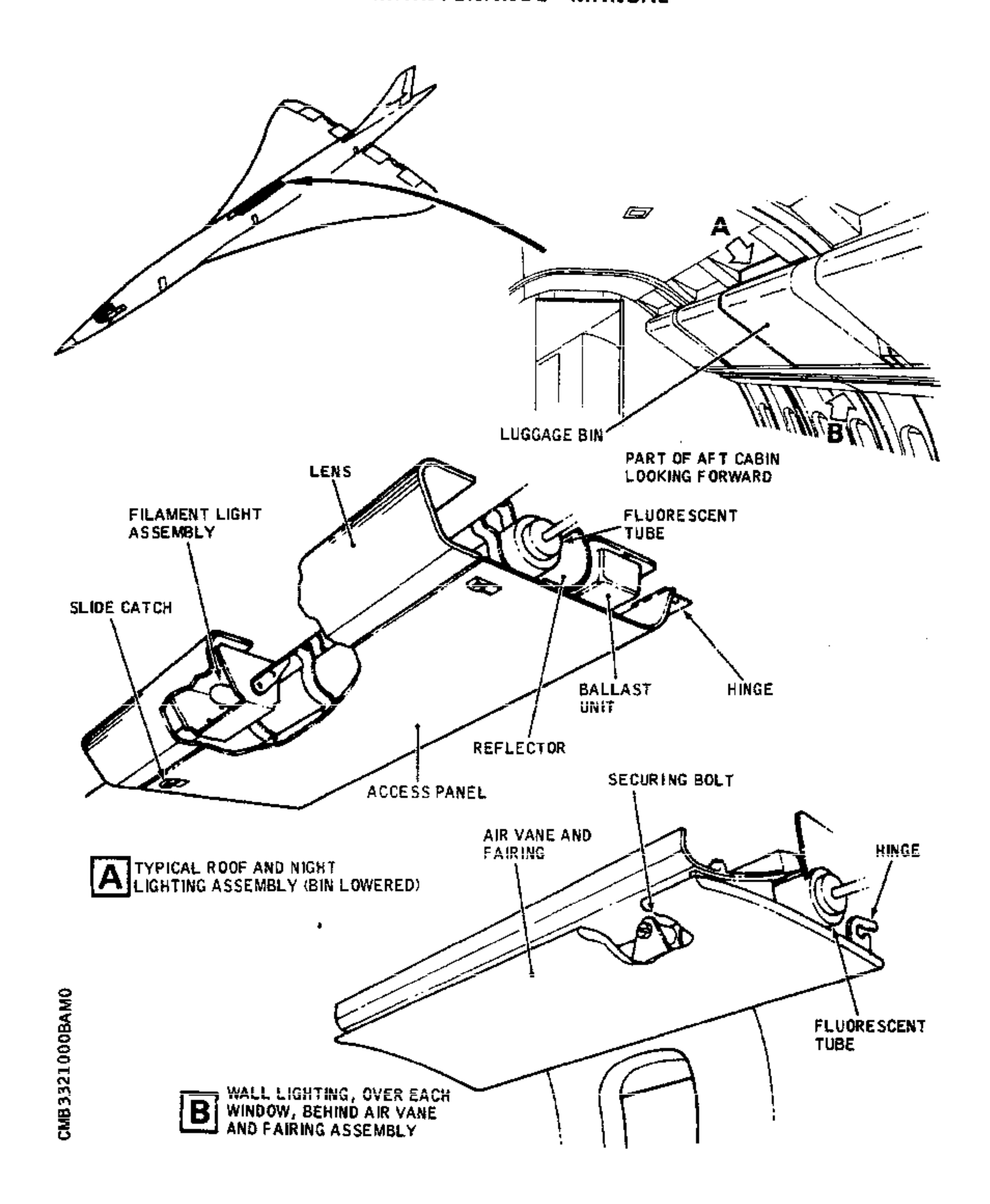
The air vane and fairing assembly is open-hinged to the service panel and bolted to a triform member, and is removable to facilitate tube replacement.

4. Operation (Ref. Fig. 003)





Main Lighting - Location of Lamps
Figure 001



Main Lighting - Equipment
Figure 002

A. Control

The fluorescent and filament lighting for the forward and rear passenger cabins is controlled by MAIN CABIN - CONTROL and SELECT switches on the LIGHTING CONTROLS section of the forward steward's control panel.

Primary control of the forward and rear cabin roof lights, wall lights and filament lights is by two BRIGHT - DIM - OFF control switches engraved FWD and AFT respectively. Secondary control is through the contacts of associated front or rear roof and wall light control relays, and two associated FULL - ROOF - WALL selector switches engraved FWD and AFT. The four relays are mounted on the forward steward's control panel.

The filament lights in both cabins are also controlled by the contacts of a passenger/standby lights control relay which is energized when the NO SMKG switch is at ON (Ref. 33-24-00).

B. Functional Description (Ref. Fig. 004)

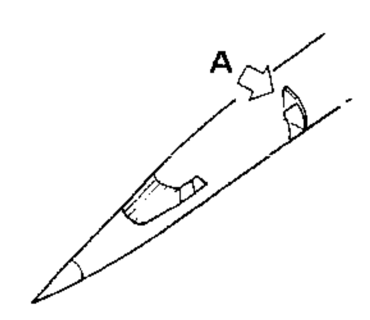
When the electrical supplies are available and the FWD or AFT steward's CONTROL switch is set to DIM, a 28 V d.c. supply is directly connected to light the associated filaments. When BRIGHT is selected the 28 V d.c. associated filament lighting is extinguished and a 115 V a.c. supply is connected to energize the appropriate forward or aft roof and wall lighting control relays, the contacts of which change over and connect a 115 V a.c. supply to the associated FWD or AFT SELECT switch. When FULL is selected at a SELECT switch, a 115 V a.c. supply is connected to light the roof and wall fluorescent lamps in the associated cabin. When ROOF is selected at a SELECT switch, the roof fluorescent lamps in the associated cabin are lit, and when WALL is selected, only the wall fluorescent lamps are lit.

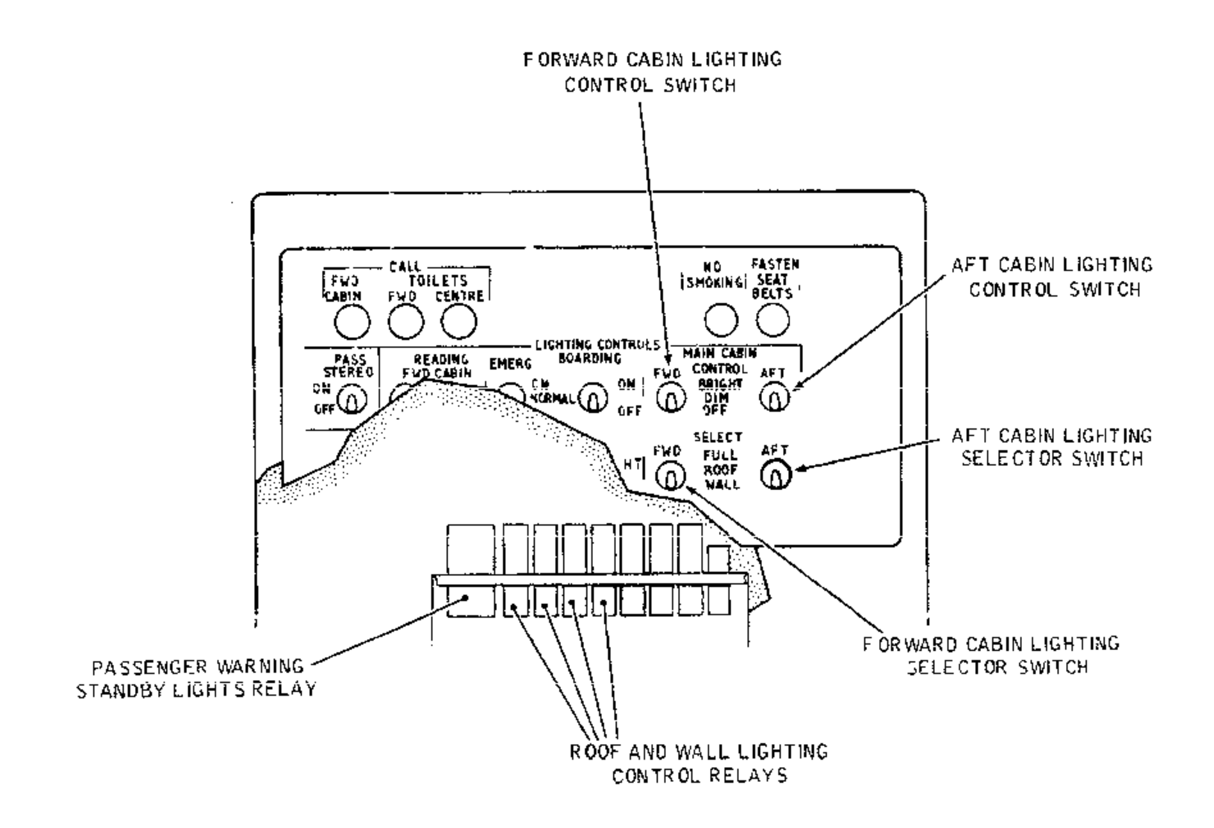
If the aircraft 115 V a.c. fails, the roof and wall lamp relays are de-energized and the contacts interrupt the supply to the associated fluorescent lamp. If a CONTROL switch is at BRIGHT, a 28 V d.c. supply is connected to light the associated forward or aft filament lamps.

R

R 5. Electrical Power Supplies

The main cabin roof lights in both cabins are supplied from

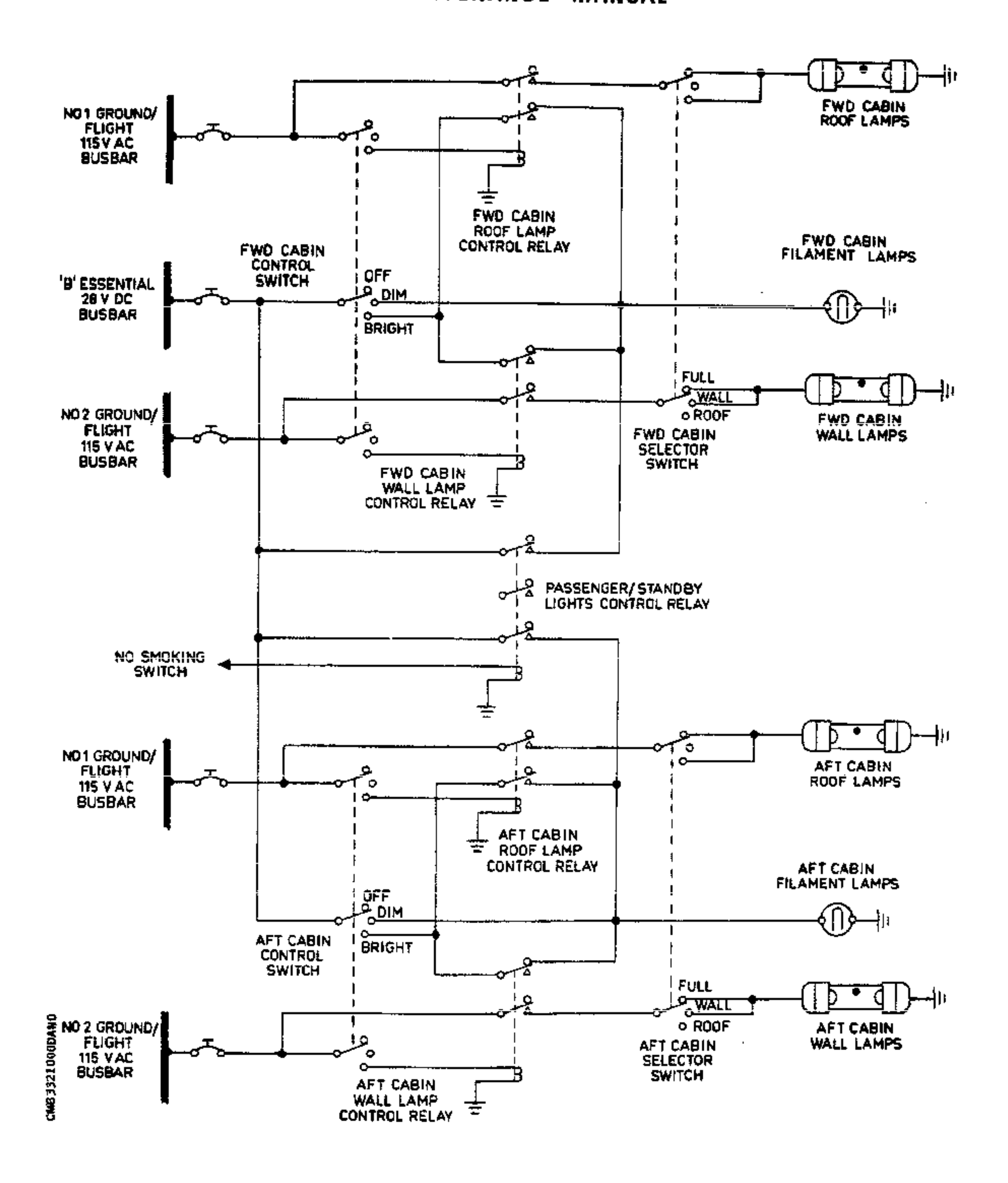




A FORWARD STEWARD'S PANEL

CMB3321000CANO

Main Lighting - Controls
Figure 003



\- Main Lighting - Simplified Schematic
Figure 004

the No.1 ground/flight 115 V a.c. busbar, through circuit breakers on panel 14-215. The wall lights in both cabins are supplied from No.2 ground/flight 115 V a.c. busbar through circuit breakers on panel 14-216. All filament lights are fed from 'B' essential 28 V d.c. busbar through a circuit breaker on panel 5-213.

MAIN LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para. 3), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

The forward and aft cabin main lighting circuits are similar, therefore the procedures and charts are applicable to either. Where two identical components are involved, i.e., one in each circuit, both references to the associated components listed in Table 101 are given, e.g., 'Renew Relay (10) or (12)'.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para.2.). At the forward stewards' control panel, set FWD or AFT cabin CONTROL and SELECT switches to "BRIGHT" and "FULL" respectively. Check that roof and wall fluorescent tubes in associated cabin are lit. IF -

- OK
- NOT OK —
  1. One tube not lit - renew ballast unit or tube.
  2. No roof lighting - Chart 101.
  3. No wall lighting - Chart 102.

B. Set FWD or AFT cabin SELECT switch to "ROOF". Check that roof lighting remains on and wall lighting goes out. IF -

- OK
- NOT OK —
  1. No roof lighting - Chart 103.

C. Set FWD or AFT cabin SELECT switch to "WALL". Check that wall lighting comes on and roof lighting goes out. IF -

- OK
- NOT OK —
  1. No wall lighting - Chart 104.

D. Simulate a forward or aft cabin roof lighting power supply failure by tripping Circuit Breaker (1) or (3) respectively. Check that filaments in associated cabin are lit. IF -

- OK
- NOT OK —
  1. No dim lighting - Chart 105.

E. Simulates a forward or aft cabin wall lighting power supply failure by tripping Circuit Breaker (2) or (4). IF -

- OK
- NOT OK —
  1. No dim lighting - Chart 106.

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OK

F. Set FWD or AFT cabin CONTROL Switch to "DIM". Check that filaments in associated cabin are lit. IF -

NOT OK — 1. No dim lighting - Chart 107.

NO ROOF LIGHTING IN FORWARD OR AFT CABIN WHEN ASSOCIATED 'CONTROL' AND 'SELECT' SWITCHES SET TO 'BRIGHT' AND 'FULL' RESPECTIVELY.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

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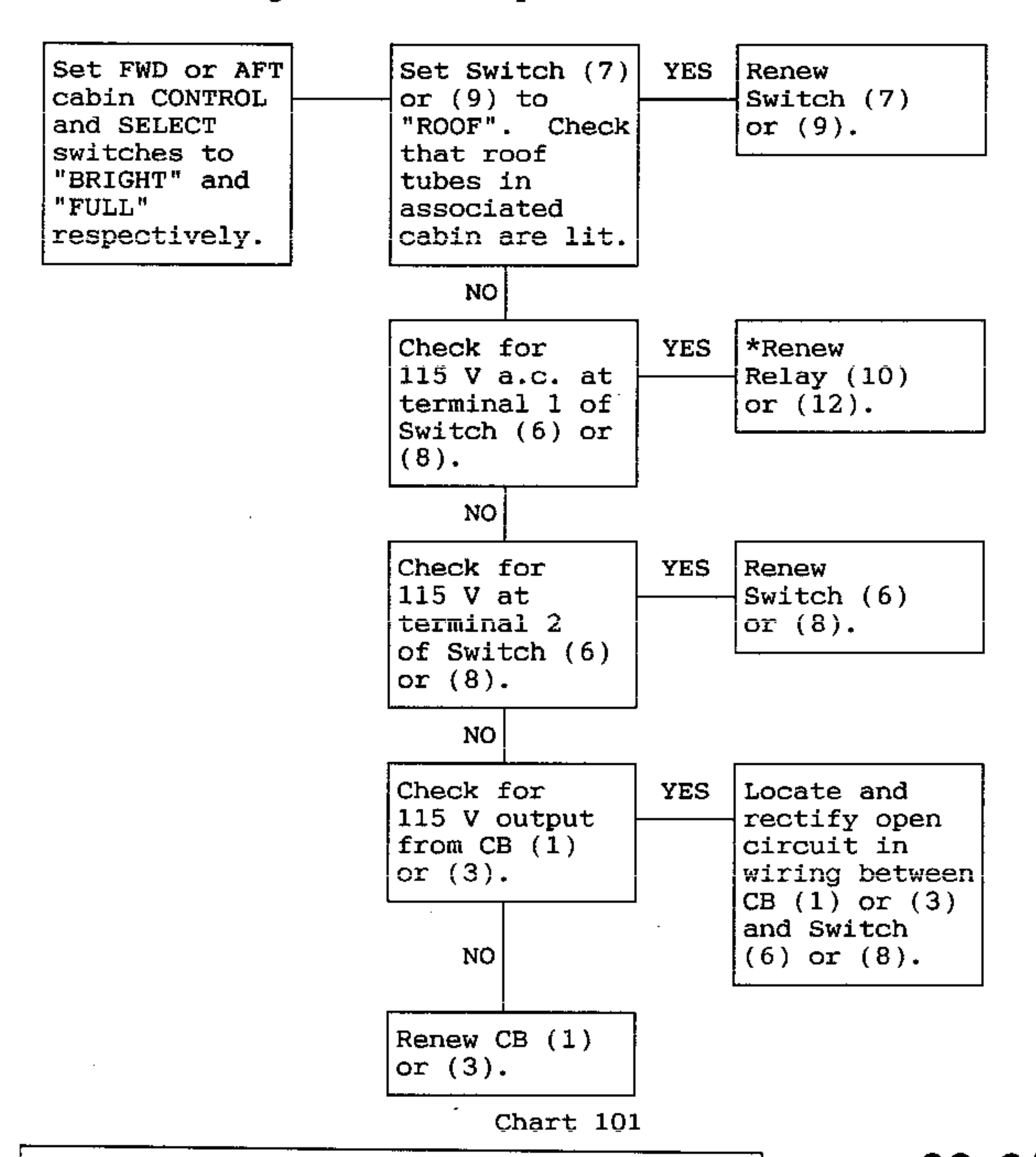


Chart 101

NO WALL LIGHTING IN FORWARD OR AFT CABIN WHEN ASSOCIATED 'CONTROL' AND 'SELECT' SWITCHES SET TO 'BRIGHT' AND 'FULL' RESPECTIVELY.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

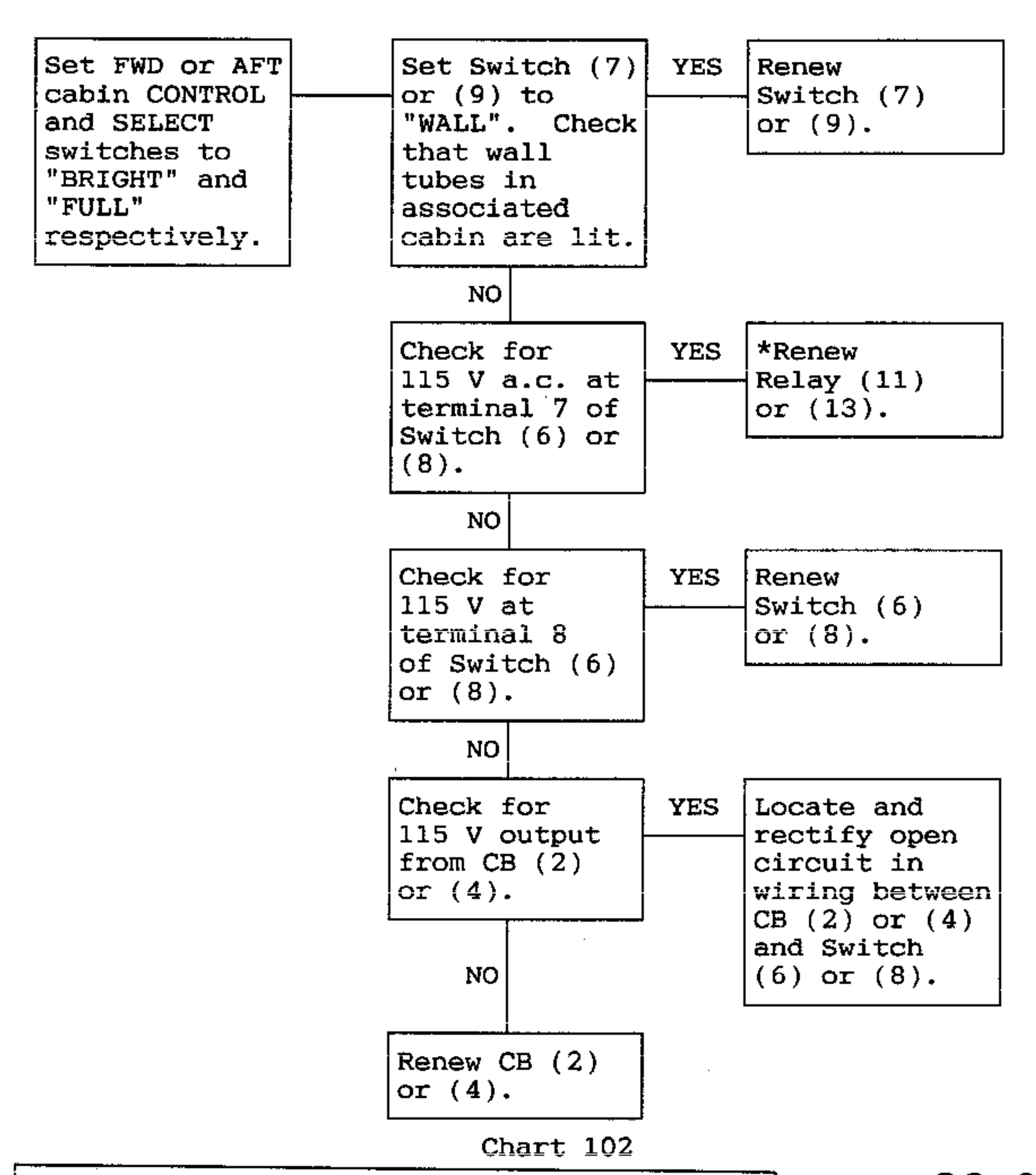


Chart 102

NO ROOF LIGHTING IN FORWARD OR AFT CABIN WHEN ASSOCIATED 'CONTROL' AND 'SELECT' SWITCHES SET TO 'BRIGHT' AND 'ROOF' RESPECTIVELY.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

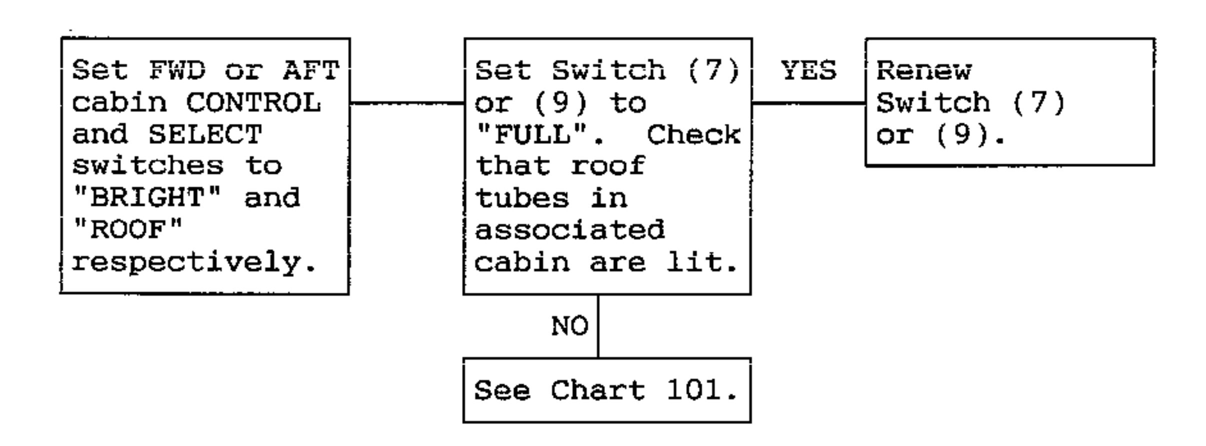


Chart 103

NO WALL LIGHTING IN FORWARD OR AFT CABIN WHEN ASSOCIATED 'CONTROL' AND 'SELECT' SWITCHES SET TO 'BRIGHT' AND 'WALL' RESPECTIVELY.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

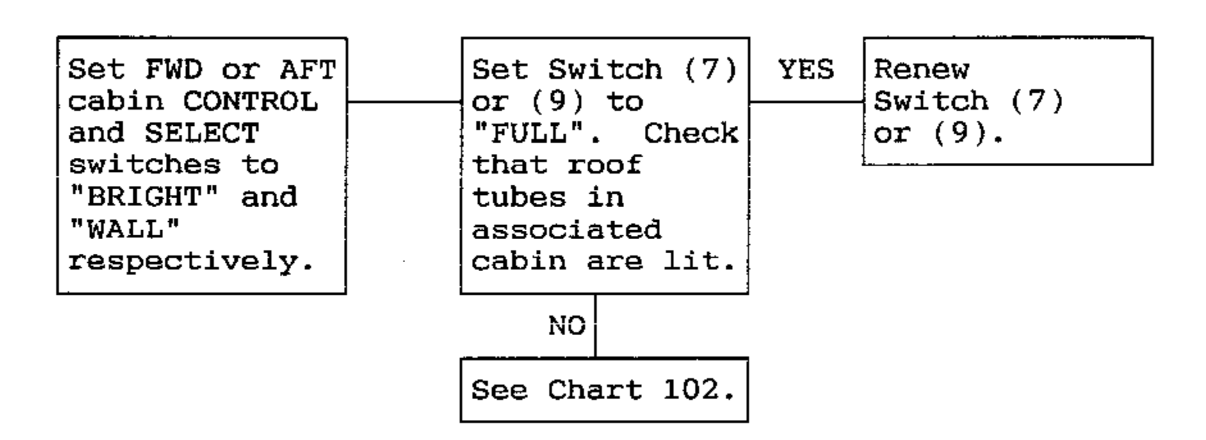


Chart 104

NO DIM LIGHTING IN FORWARD OR AFT CABIN WHEN ASSOCIATED 'CONTROL' SWITCH SET TO 'BRIGHT' AND ROOF LIGHTING POWER SUPPLY FAILURE SIMULATED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

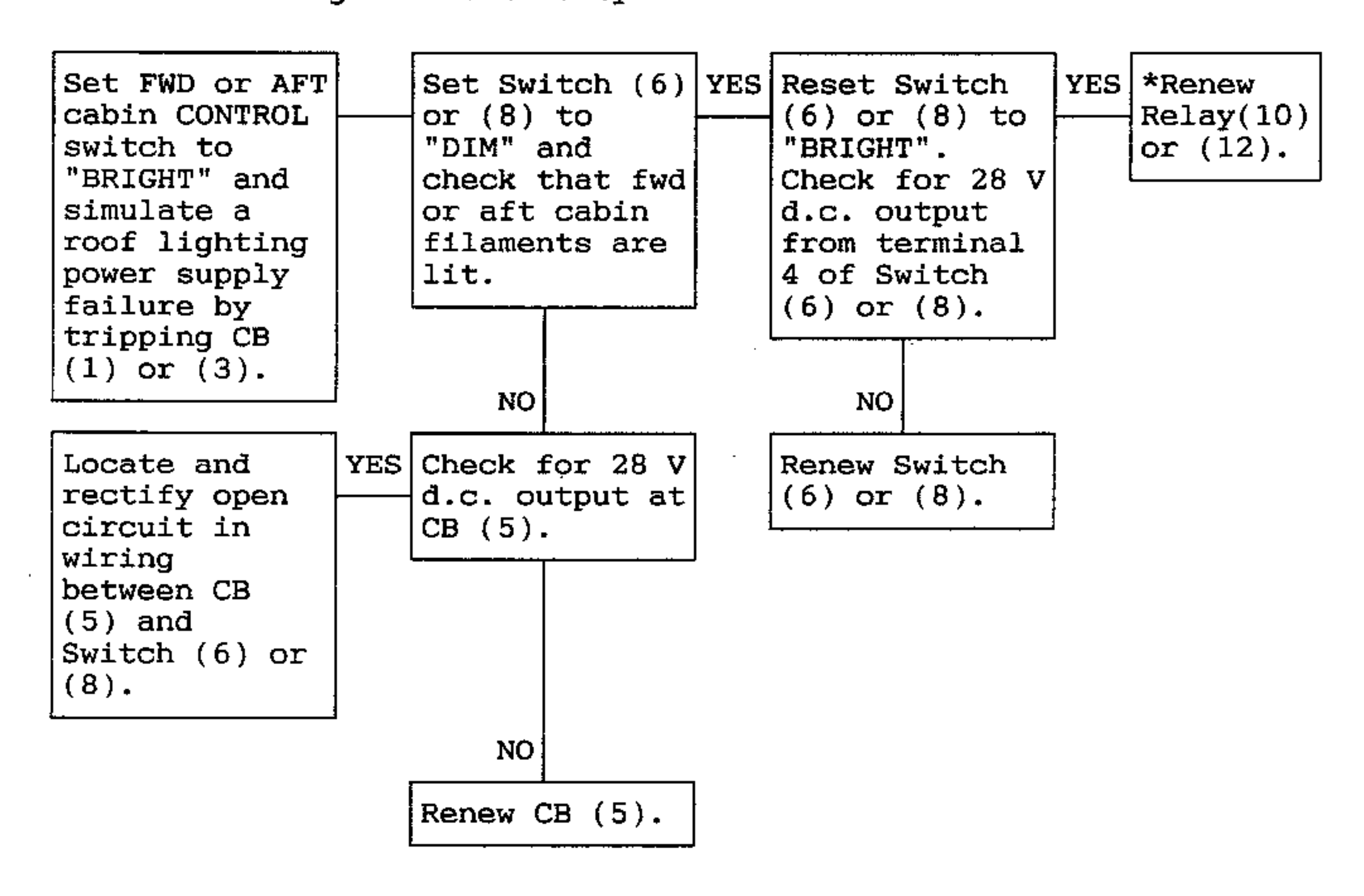


Chart 105

NO DIM LIGHTING IN FORWARD OR AFT CABIN WHEN ASSOCIATED 'CONTROL' SWITCH SET TO 'BRIGHT' AND WALL LIGHTING POWER SUPPLY FAILURE SIMULATED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

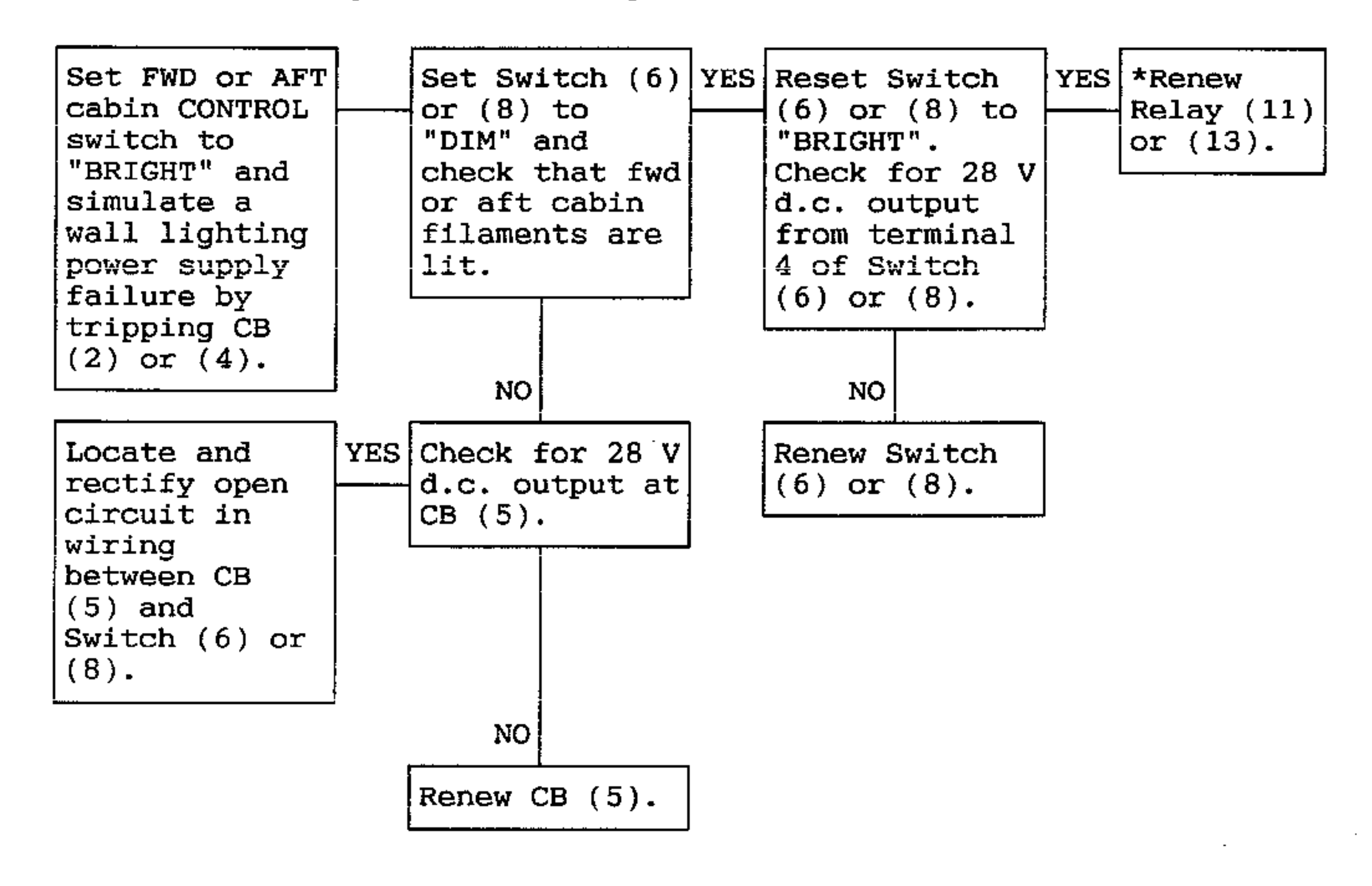


Chart 106

NO DIM LIGHTING IN FORWARD OR AFT CABIN WITH ASSOCIATED 'CONTROL' SWITCH SET TO 'DIM'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

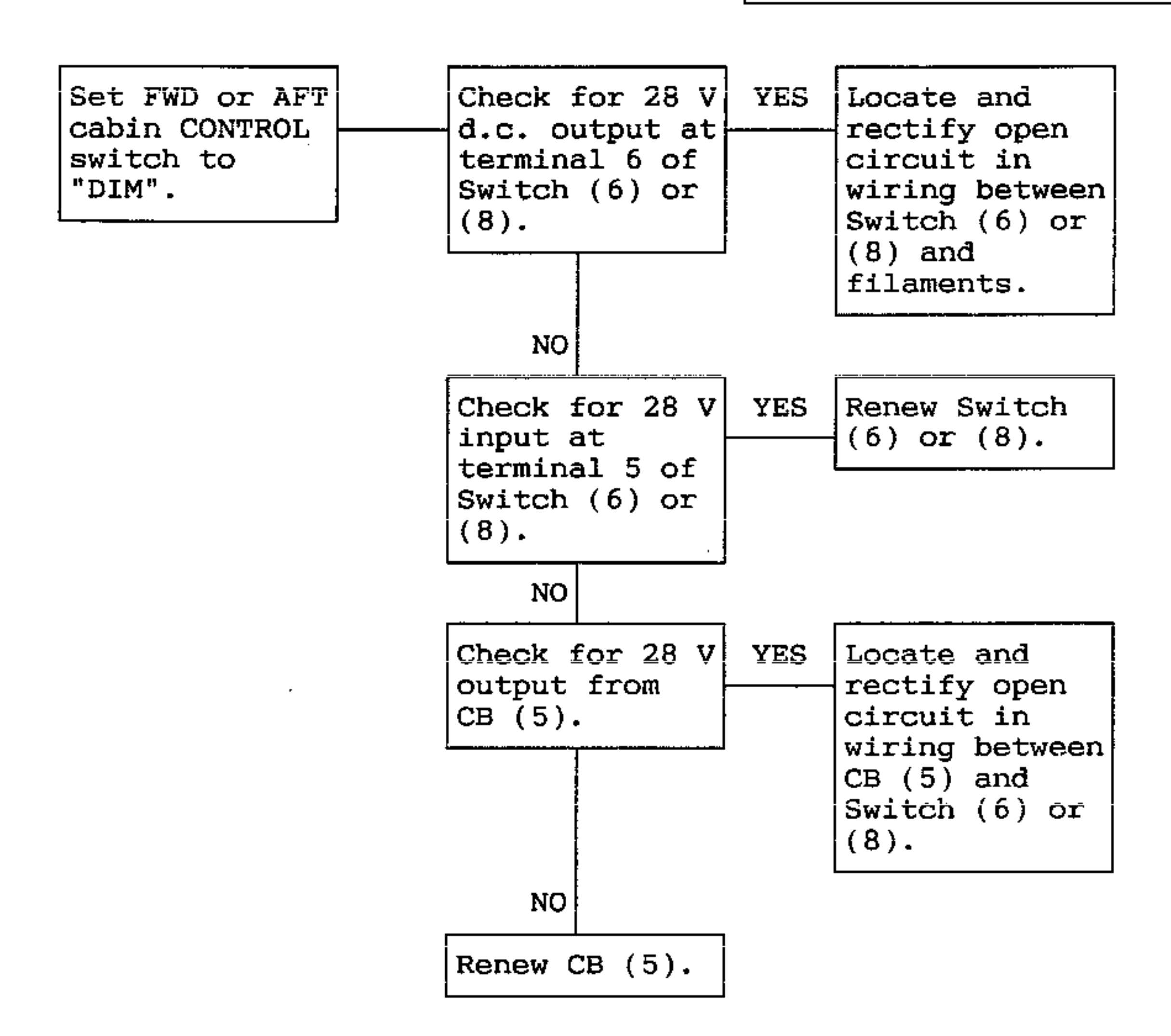


Chart 107

	ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
RB	(1) Circuit breaker 115 V	-	14-215	L9130	Map ref. D10	24-50-00 R/I	
	(2) Circuit breaker 115 V	-	14-216	L452	Map ref. C9	24-50-00 R/I	
RB	(3) Circuit breaker 115 V	-	14-215	L9131	Map ref. C10	24-50-00 R/I	
	(4) Circuit breaker 115 V	-	14-216	L451	Map ref. B9	24-50-00 R/I	
	(5) Circuit breaker 28 V	-	5-213	L455	Map ref. D19	24-50-00 R/I	
	(6) FWD CONTROL switch	-	1-221	L608	Fwd. stewards' control panel	33-21-00 R/I	
	(7) FWD SELECT switch	-	1-221	L1254	Fwd. stewards' control panel	33-21-00 R/I	
	(8) AFT CONTROL switch	-	1-221	L607	Fwd. stewards' control panel	33-21-00 R/I	
	(9) AFT SELECT switch	-	1-221	L1255	Fwd. stewards' control panel	33-21-00 R/I	
	(10) Fwd. cabin roof lamp control relay	-	1-221	L1250	Fwd. stewards' control panel	33-21-00 R/I	
	(11) Fwd. cabin wall lamp control relay	-	1-221	L1251	Fwd. stewards' control panel	33-21-00 R/I	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(12) Aft cabin roof lamp control relay	-	1-221	L1252	Fwd. stewards' control panel	33-21-00 R/I	
(13) Aft cabin wall lamp control relay	-	1-221	L1253	Fwd. stewards' control panel	33-21-00 R/I	

Component Identification
Table 101

RB

MAIN LIGHTING - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

RB

1. General (Ref. Fig. 401)

This topic contains instructions for the renewal of fluorescent tubes and filaments in the passenger compartments, and for the removal and installation of ballast units associated with the passenger compartment main lighting.

Fluorescent tubes, filaments and ballast units are fitted to service panels located behind luggage bins along both sides of the passenger compartments. The roof lighting fluorescent tubes, associated ballast units and filaments are mounted on the upper section of the service panels behind hinged access covers. The wall lighting fluorescent tubes are fitted to the lower section of the service panels and are concealed by air vane and fairing assemblies. Associated ballast units are mounted on the upper section of the service panels close to the roof light ballast units.

RB A slow blow fuse is contained within a fuse holder mounted
RB externally on the ballast unit. This allows easy replacement
RB of the fuse without disassembling the unit.

RB NOTE: On A/C 002 and 006 some ballast units have a normal
RB fuse mounted internally. A fuse failure on these units
RB will necessitate the ballast unit assembly being
RB replaced with a modified unit.

Instructions for removal and installation of main lighting control switches and control relays are contained in 32-20-00.

2. Roof Lighting Fluorescent Tube

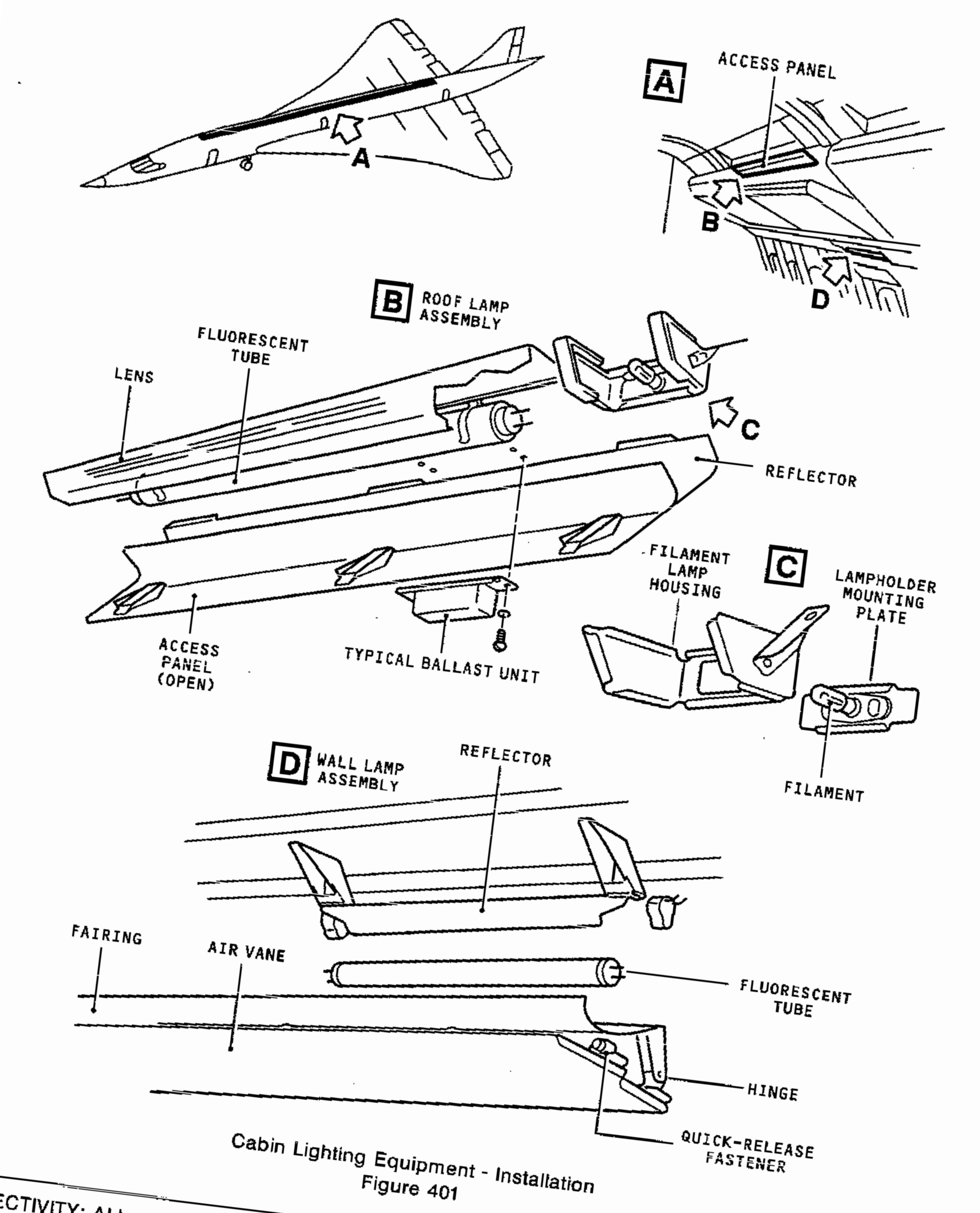
A. Prepare

RB

(1) Set the FWD or AFT lighting CONTROL switch, as appropriate, on the forward Stewards' control panel, to "OFF".

RB

(2) Lower the appropriate luggage bin.



Cabin Lighting Equipment - Installation
Figure 401

(3) Operate the slide catches to disengage the access panel from the light lens and lower the panel on its hinges.

B. Renew

(1) Disconnect the electrical connectors from the ends of the tube and withdraw the tube from the spring clips.

(2) Fit a replacement and connect the electrical connectors to the ends of the tube.

C. Conclusion

RB

(1) Set the appropriate FWD or AFT lighting CONTROL switch to "BRIGHT" and the associated FWD or AFT SELECT switch to "ROOF". Check that the fluorescent tube is lit. Return the CONTROL switch to "OFF".

RB

(2) Close the access panel and ensure that the slide catches engage the bottom edge of the light lens.

(3) Close the luggage bin.

3. Wall Lighting Fluorescent Tube

A. Prepare

RB

(1) Set the FWD or AFT lighting CONTROL switch, as appropriate, on the forward Stewards' control panel, to "OFF".

RB

(2) Remove the air vane and fairing assembly to gain access to the fluorescent tube, by supporting the assembly and inserting a screwdriver in the space between the air vane and the fairing at the fixing points, and releasing the quick-release fasteners securing the assembly to the triform member.

(3) Withdraw the air vane and fairing sufficiently to disengage the air vane hinges from their attachment brackets on the service panel and remove the assembly from the panel.

B. Renew

(1) Disconnect the electrical connectors from the ends of the tube and withdraw the tube from the spring clips.

(2) Fit a replacement and connect the electrical connectors to the ends of the tube.

C. Conclusion

RB

(1) Set the appropriate FWD or AFT lighting CONTROL switch to "BRIGHT", and the associated FWD or AFT SELECT switch to "WALL" and check that the fluorescent tube is lit. Return the CONTROL switch to "OFF".

RB

(2) Fit the air vane and fairing assembly to the service panel by engaging the air vane hinges with the attachment brackets, and securing the quick-release fasteners to the triform member.

4. Dim Lighting Filament

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clip	-

B. Prepare

(1) Trip the CABIN NIGHT LTS SUP circuit breaker L455, on panel 5-213, map ref. D19, and fit a safety clip.

(2) Lower the appropriate luggage bins.

(3) Operate the slide catches on the access panels to disengage the panels from the light lens, and lower the panels on their hinges.

C. Renew

(1) Ease the lampholder mounting plate from the filament lamp housing and withdraw it from the housing.

(2) Fit a replacement filament.

(3) Fit the lampholder mounting plate to the filament lamp housing and press the plate firmly into position to ensure proper attachment to its mounting.

D. Conclusion

(1) Remove the safety clip and reset the CABIN NIGHT LTS SUP circuit breaker, L455.

RB

(2) Set the appropriate FWD or AFT lighting CONTROL switch on the forward Stewards' control panel to "DIM" and check that the filament is lit. Return the switch to "OFF".

RB

(3) Close the access panels and ensure that the slide catches engage the bottom edge of the light lens.

(4) Close the luggage bins.

5. Ballast Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clip	-

B. Prepare

RB

(1) Set the FWD or AFT lighting CONTROL switch, as appropriate, on the forward Stewards' control panel, to "OFF".

(2) Trip the associated circuit breakers listed below and fit safety clips.

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RB	FWD CABIN CEILING LTS SUP	14-215	L9130	D10
RB	AFT CABIN CEILING LTS SUP	14-215	L9131	C10

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FWD CABIN WALL LTS SUP	14-216	L452	C9
AFT CABIN WALL LTS SUP	14-216	L451	B9

RB

(3) Lower the appropriate luggage bin.

(4) Operate the slide catches on the access panel to disengage the panel from the light lens, and lower the panel on its hinges.

RB C. Replace Fuse

RB (1) Unscrew fuse holder cap.

RB (2) Replace fuse.

RB (3) Refit fuse holder cap.

RB NOTE: Recurring fuse failures must be actioned by
RB replacing the suspect ballast unit.

RB Replacement caps and holders can be obtained
RB by ordering Pt. No. 3104101.

RB D. Remove

(1) Disconnect the electrical cables from the ballast unit.

(2) Support the ballast unit. Remove the screws and washers securing the ballast unit to the service panel and remove the unit from the panel.

RB E. Install

(1) Comply with the electrical safety precautions.

(2) Fit the ballast unit to its mounting on the service panel and secure it with he screws and washers.

(3) Connect the electrical cables to the ballast unit, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Check that the ballast unit is bonded in accordance with 20-27-11.

RB F. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clips and reset the associated circuit breakers tripped before removal.

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RB

(3) Set the FWD or AFT lighting CONTROL switch, as appropriate, to "BRIGHT" and the associated FWD or AFT SELECT switch to "FULL". Check that the fluorescent tubes associated with the ballast unit are lit.

RB

(4) Close the access panel and ensure that the slide catches engage the bottom edge of the light lens.

(5) Close the luggage bin.

(6) Switch off and disconnect electrical ground power as detailed in 24-41-00.

MAIN LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains a Functional Test only, which details the procedure to prove that the fluorescent and filament lighting in the forward and rear cabins functions correctly. Operational and System Tests are not considered necessary in this application.

2. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

C. Test

(1) At the forward steward's control panel, set the FWD cabin SELECT switch to "FULL" and the FWD cabin CONTROL switch to "BRIGHT". Check that the roof and wall fluorescent lighting in the forward cabin is on and that the filament lighting is off.

(2) Set the FWD cabin SELECT switch to "WALL" and check that the roof fluorescent lighting is off and the wall fluorescent lighting remains on.

(3) Set the FWD cabin SELECT switch to "ROOF". Check that the wall fluorescent lighting is off and that the roof fluorescent lighting is on. Set the FWD cabin CONTROL and SELECT switches to "OFF".

(4) Repeat operations (1), (2) and (3) with respect to the aft cabin, using the AFT cabin CONTROL and SELECT switches.

(5) Trip the appropriate roof lighting supply circuit

breaker, listed below, and fit a safety clip.

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RB	FWD CABIN CEILING LTS SUP	14-215	L9130	D10
RB	AFT CABIN CEILING LTS SUP	14-215	L9131	C10

(6) Set the FWD cabin SELECT switch to "FULL" and the FWD cabin CONTROL switch to "BRIGHT". Check that the filament and wall fluorescent lighting in the forward cabin is on and the roof fluorescent lighting is off. Set both switches to "OFF". Check that the filament lighting is off.

(7) Trip the appropriate wall lighting supply circuit breaker, listed below, and fit a safety clip.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FWD CABIN WALL LTS SUP	14-216	L452	C9
AFT CABIN WALL LTS SUP	14-216	L451	B9

(8) Set the FWD cabin SELECT switch to "FULL" and the FWD cabin CONTROL switch to "BRIGHT". Check that the filament lighting in the forward cabin is on and that the wall and roof fluorescent lighting is off. Set both switches to "OFF".

(9) Remove the safety clips and reset the associated cabin roof and wall fluorescent lighting supply circuit breakers.

(10) Repeat operations (5) to (9) with respect to the aft cabin, using the AFT cabin CONTROL and SELECT switches.

(11) Set the FWD cabin CONTROL switch to "DIM". Check that the forward cabin filament lighting is on, and that the roof and wall fluorescent light is off regardless of the position of the FWD cabin SELECT switch. Return the CONTROL switch to "OFF".

(12) Repeat operation (11) with respect to the aft cabin, using the AFT cabin CONTROL and SELECT switches.

D. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

TOILET LIGHTING - DESCRIPTION AND OPERATION

1. General

Each toilet has fluorescent lights for normal illumination, and a standby filament lamp to provide lighting automatically in the event of an a.c. power failure.

In flight, with a.c. power available, one fluorescent tube in each toilet is permanently lit. The remaining fluorescent tubes are controlled by a microswitch operated by the toilet door locking rod.

With the aircraft on the ground and ground power connected, all fluorescent tubes in each toilet are lit regardless of the position of the toilet door.

2. Toilet Lighting Assembly (Ref. Fig. 001)

The toilet lighting assembly comprises two separate lamp units, one mounted vertically on the inboard console at the side of the mirror, and the other mounted horizontally below the bottom edge of the mirror.

The horizontal lamp unit consists of a mounting plate supporting one fluorescent tube behind a translucent cover which slots into the upper edge of the mounting plate and is secured by screws at the bottom.

The vertical lamp unit incorporates a mounting plate on which two fluorescent tubes are fitted end to end and recessed into the console. A translucent cover is fitted to the flanged edges of the mounting plate and retained by the console trim. The three associated fluorescent tube ballast units are housed in the console behind the vertical lamp unit, and the standby filament lamp is mounted on the upper end of the vertical lamp unit mounting plate.

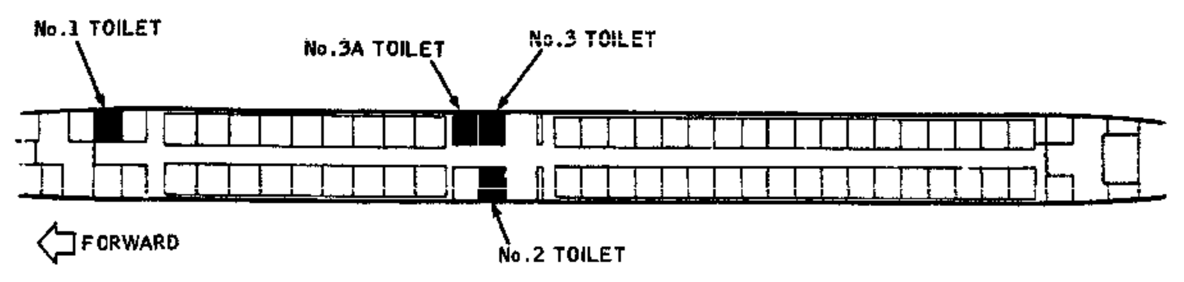
3. Operation

(Ref. Fig. 002)

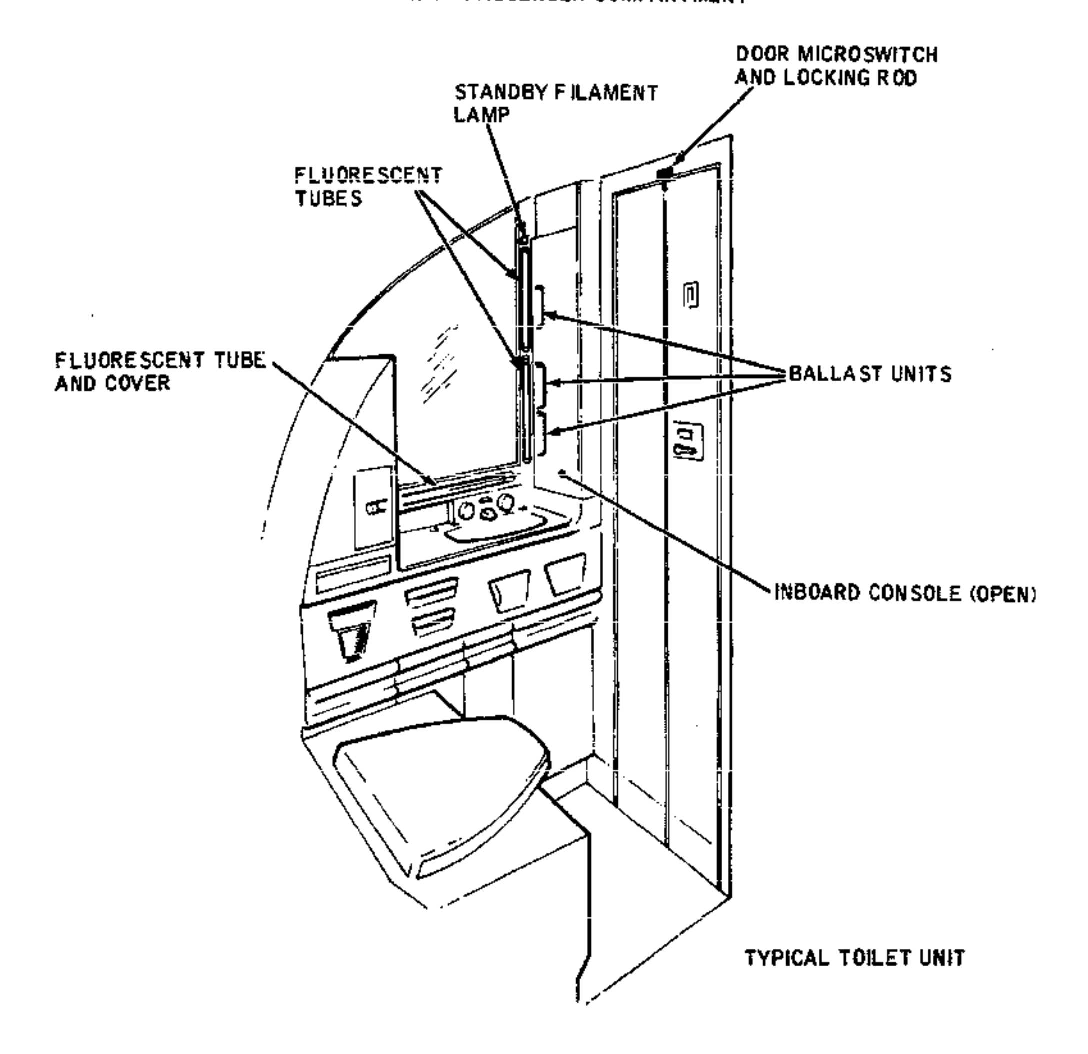
A. Control

One fluorescent tube in each toilet is supplied direct from No.2 ground/flight 115 V a.c. busbar. The remaining tubes are supplied from the same source but the supply is routed through an auxiliary contact of No.2 ground/
R flight change-over contactor (Ref. 24-41-00) and
R either through separate contacts of a ground power
R 'on' relay or, depending on the position of the toilet

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PLAN VIEW OF PASSENGER COMPARTMENT



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Toilet Lighting
Figure 001

R door, through the associated toilet door microswitch.

The standby filament lamp in each toilet is supplied
from 'B' essential 28 V d.c. busbar through a contact
of the a.c. power failure relay (Ref. 33-23-00) which is
R controlled by No.1 ground/flight 115 V a.c. busbar
output.

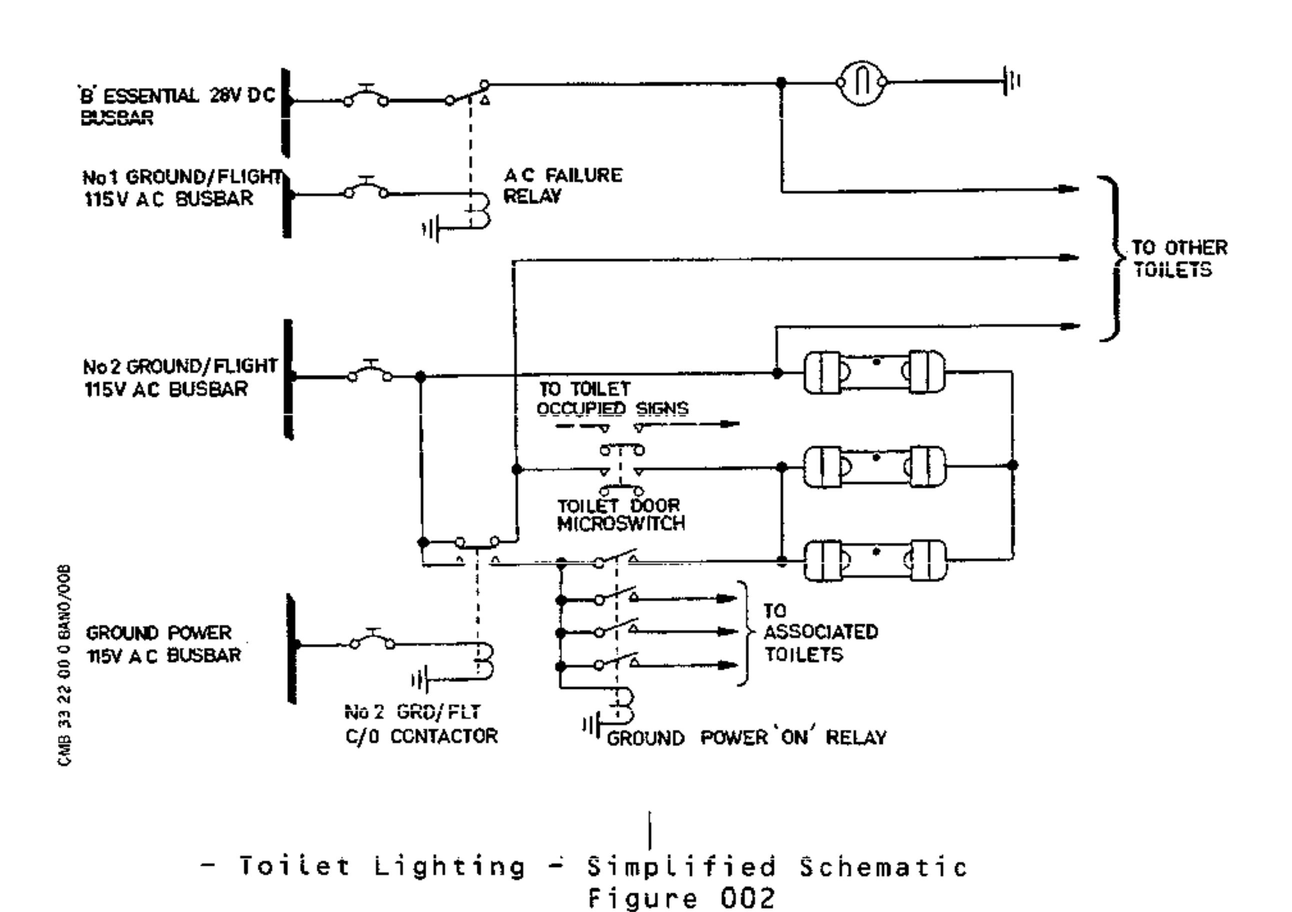
B. Functional Description

With the aircraft in flight and a.c. power available, one fluorescent tube in each toilet is supplied with 115 V a.c. direct and remains lit. No.2 ground/flight change-over contactor is de-energized to route the a.c. power supply to each toilet door microswitch. When the associated toilet door is closed and bolted the microswitch is operated, closing a double set of contacts, one set completing the light circuit and lighting the remaining fluorescent tubes, the other set completing the 'toilet engaged' sign circuitry (Ref. 33-25-00).

On the ground, with ground power connected to the
aircraft (Ref. 24-41-00), one fluorescent tube in each
toilet is supplied direct and remains lit. With ON
selected at the GROUND SERVICE control switch
(Ref. 24-41-00), No.2 ground/flight change-over contactor
R is energized to connect the supply to energize the ground
R power 'on' relay. Power is now routed through each
R contact of the ground power 'on' relay to the unlit
R fluorescent tubes in the associated toilet, bypassing
R the door microswitch. All fluorescent tubes in each
R toilet are now lit regardless of the toilet door
R position.

R Setting the GROUND SERVICE control switch (Ref. 24-41-00)
R de-energizes the No.2 ground/flight change-over contactor
R and therefore the ground power 'on' relay, and the toilet
R lights are then supplied as for the in-flight con-
R figuration.

When a.c. power is available the a.c. power failure relay is energized, opening a set of contacts to interrupt the standby filament lamp circuit. If the a.c. power supply fails the relay is de-energized and the contacts change over to connect the 28 V d.c. supply to each standby filament lamp.



- Toilet Lighting - Simplified Schematic
Figure 002

R

TOILET LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

R

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

All toilet lighting circuits are similar, therefore the procedures and charts are applicable to each circuit. When identical components are involved, i.e., one in each circuit, the references to the associated components listed in Table 101 are given, e.g., 'Renew Microswitch (8), (9) or (10)'.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para.2.). Set GROUND SERVICE control switch to "ON". Check that all fluorescent tubes in each toilet are lit regardless of the toilet door position. IF -

OK

NOT OK:
1. One fluorescent tube not lit - renew ballast unit or tube.
2. One fluorescent tube only lit in each toilet - Chart 101.
3. All fluorescent tube in each toilet unit - renew CB (1).

B. Set GROUND SERVICE control switch to "OFF" and open each toilet door. Check that only one fluroescent tube is lit in each toilet. IF -

OK

NOT OK:
1. No fluorescent tubes in a toilet lit - renew ballast unit or tube.

C. Close and bolt each toilet door, in turn, and check that all fluorescent tubes in each toilet are lit. IF -

OK

NOT OK:
1. Only one fluorescent tube lit in a toilet - Chart 102.

D. Simulate an a.c. power failure by tripping CB (3). In each toilet, check that the standby filament is lit. IF -

NOT OK:
1. Filament in a toilet not lit - Chart 103.

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ONLY ONE FLUORESCENT TUBE LIT IN EACH TOILET WHEN 'GROUND SERVICE' CONTROL SWITCH SET TO 'ON'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

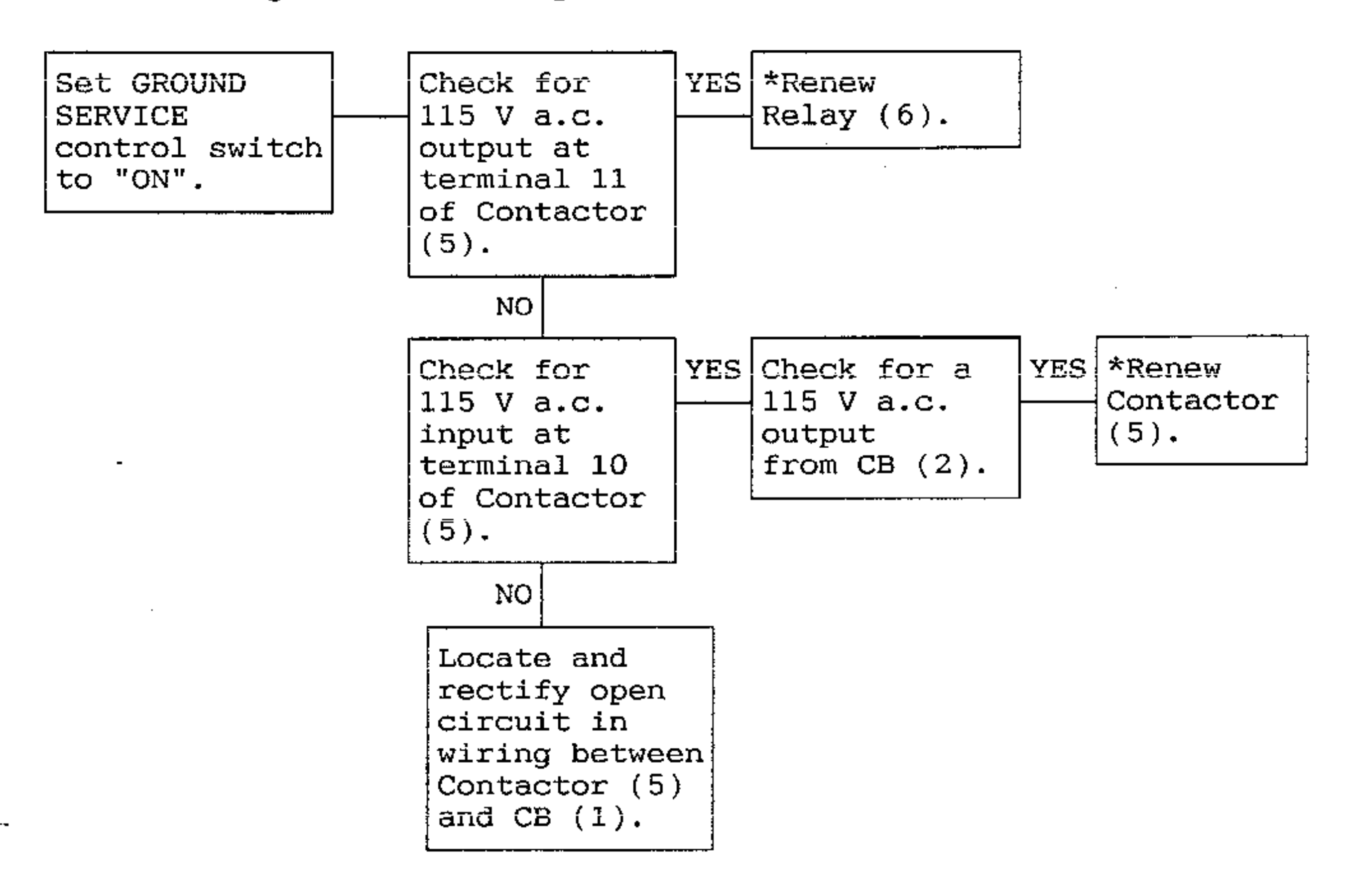


Chart 101

ONLY ONE FLUORESCENT TUBE LIT IN A TOILET WITH 'GROUND SERVICE' CONTROL SWITCH SET TO 'OFF' AND TOILET DOOR CLOSED AND BOLTED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

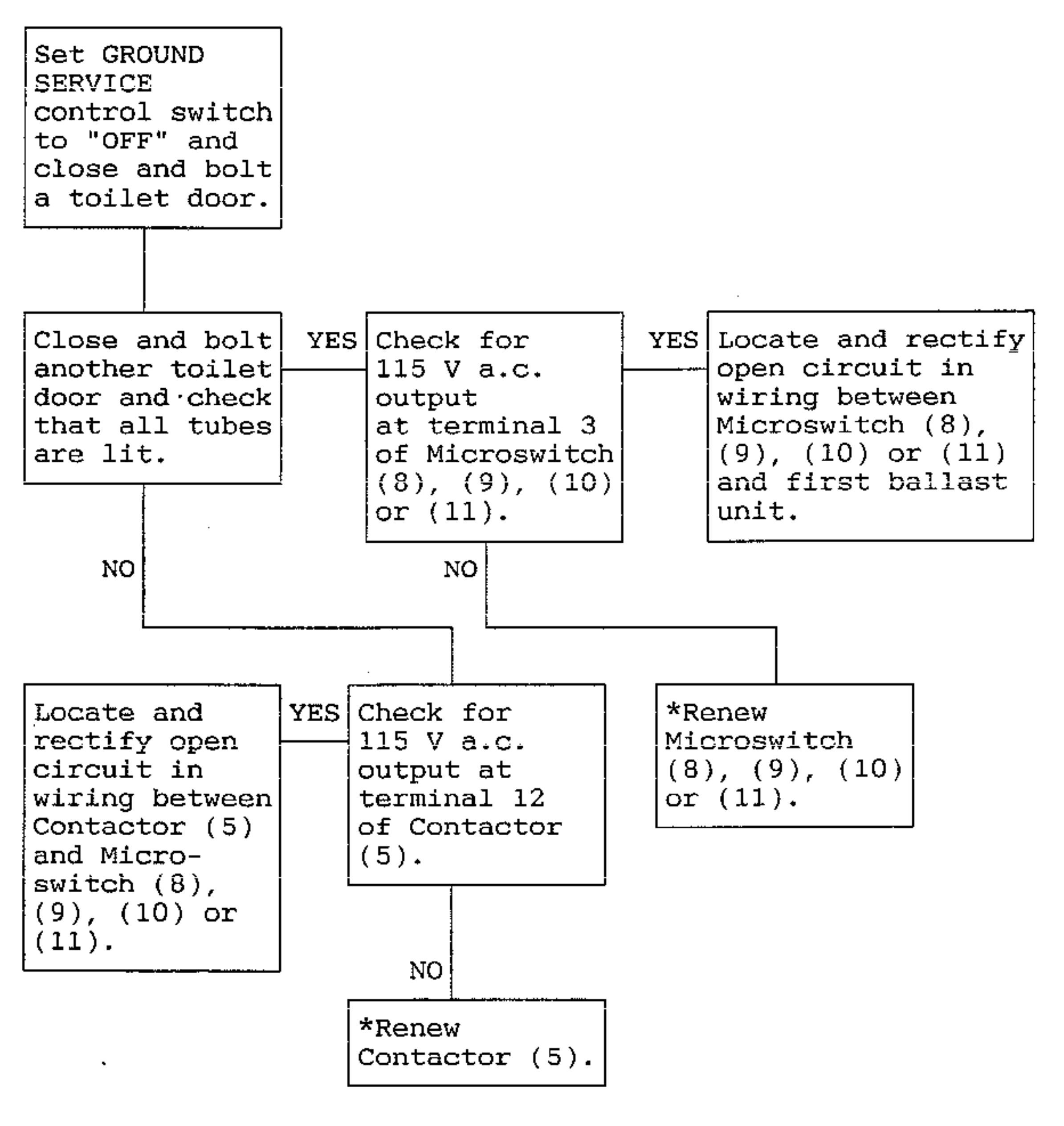


Chart 102

FILAMENT IN A TOILET NOT LIT WHEN AC POWER FAILURE SIMULATED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

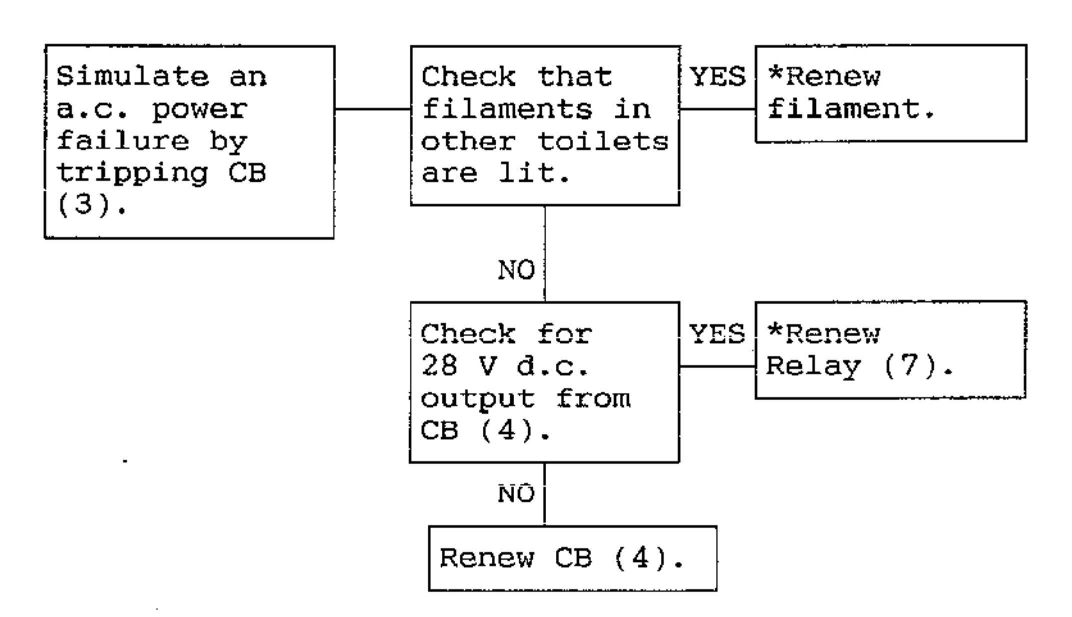


Chart 103

R

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit breaker 115 V	-	14-216	L985	Map ref. C10	24-50-00 R/I	
(2) Circuit breaker 115 V	-	25-216	X363	Map ref. A5	24-50-00 R/I	
(3) Circuit breaker 115 V	-	14-215	L232	Map ref. C11	24-50-00 R/I	
(4) Circuit breaker 28 V	-	5-213	L455	Map ref. D19	24-50-00 R/I	
(5) No.2 ground/flight change-over contactor	-	12-216	X365	Flight compartment RH racking	24-41-00 R/I	
(6) Ground power 'ON' relay	-	12-216	L986	Flight compartment RH racking	33-22-00 R/I	
(7) AC power failure relay	-	1-221	L698	Fwd. steward's control panel	33-23-00 R/I	
(8) Toilet door microswitch	-	222	Toilet L981	Fwd. toilet, fwd. of front cabin	33-22-00 R/I	
(9) Toilet door microswitch	-	223	Toilet L983	LH toilet, rear of front cabin	33-22-00 R/I	
(10) Toilet door microswitch	-	224	Toilet L984	RH toilet, rear of front cabin	33-22-00 R/I	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
(11) Toilet door microswitch	-	224		Toilet RH centre L982 toilet	33-22-00 R/I	

Component Identification
Table 101

RB TOILET LIGHTING - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

RB

1. General

This topic contains instructions for the renewal of fluorescent tubes and filament lamps associated with toilet lighting, and for the removal and installation of ballast units, microswitches and a 'ground power on' relay.

Two vertically mounted fluorescent tubes fitted end to end are recessed into an inboard console at the side of the mirror,
RB behind a translucent cover that is hinged on the cosmetic rack. A standby filament lamp is mounted in the console above the fluorescent tubes.

RB

RB One fluorescent tube is mounted horizontally inside the shelf, behind a translucent cover that slots into the upper section of the lamp mounting plate and is secured by screws at the bottom.

RB

The associated fluorescent tube ballast units are mounted within
RB the hinged cosmetic rack door behind the fluorescent tubes.

RB Toilet door microswitches are fixed in the fore-and-aft bulkhead
RB of each toilet. Access to the microswitch is described on
RB page 405.

A 'ground power on' plug-in relay associated with the toilet main lighting system is located in the flight compartment right-hand upper racking on shelf 12-216.

2. Fluorescent Tubes

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Isolate the toilet main lighting power supply by tripping the TOILET MAIN LTS SUP circuit breaker L985, on panel 14-216, map ref.C10. Fit a circuit breaker safety clip.

C. Renew Fluorescent Tube Below Mirror

(1) Remove the screw securing the bottom edge of the translucent cover to the lamp mounting plate and withdraw from the horizontal shelf.

(2) Disconnect the electrical connectors from the ends of the tube and withdraw the tube from the spring clips.

(3) Fit a replacement tube and connect the electrical connectors to the ends of the tube.

(4) Refit the translucent cover to the lamp mounting plate and secure it with the screw.

D. Renew Fluorescent Tubes in the Cosmetic Rack

(1) Gain access to rear of ashtray, pull down the latch pin and the translucent cover will hinge open.

(2) Disconnect the electrical connectors from the ends of the tube and withdraw the tube from the spring clips.

(3) Fit a replacement tube and connect the electrical connectors to the ends of the tube.

(4) Close the translucent cover by pulling down on the latch pin, the door is secured when the pin is released.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the TOILET MAIN LTS SUP circuit breaker L985.

(3) Check that the GROUND SERVICE control switch on the forward steward's control panel is at ON.

(4) Check that all fluorescent tubes in the toilet are lit.

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Standby Filament

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Isolate the standby filament lamp supply by tripping the CABIN NIGHT LTS SUP circuit breaker L455, on panel 5-213, map ref.D19. Fit a circuit breaker safety clip.

C. Renew

(1) Press in the sides of the translucent cover to release it from the console trim and withdraw the cover from the console.

(2) Remove the filament and fit a replacement.

(3) Refit the translucent cover to the console by easing the edges of the cover behind the console trim.

D. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the CABIN NIGHT LTS SUP circuit breaker, L455.

(3) Simulate an a.c. power failure by tripping the FLT DECK ROOF LTS SUP circuit breaker L232, on panel 14-215 map ref.C11.

(4) Check that the standby filament is lit.

(5) Reset circuit breaker L232.

(6) Switch off and connect electrical ground power as detailed in 24-41-00.

4. Ballast Units

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Isolate the toilet main lighting power supply by tripping the TOILET MAIN LTS SUP circuit breaker L985, on panel 14-216, map ref.C10. Fit a circuit breaker safety clip.

RB

(2) Gain access to the ballast units, at the rear of the inboard console door, by pulling the console door to disengage the magnetic catches. Swing open the console door on its hinges.

RB

C. Remove

(1) Disconnect the electrical cables from the ballast unit.

(2) Remove the nuts and screws securing the ballast unit to the mounting plate and withdraw the ballast unit from the console door.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the ballast unit to its mounting at the rear of the inboard console door and secure it with the screws and nuts.

(3) Connect the electrical cables to the ballast unit, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Check that the ballast unit is bonded in accordance with 20-27-11.

E. Conclusion

RB

(1) Close the inboard console door, ensuring that the magnetic catches engage.

RB

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Remove the safety clip and reset the TOILET MAIN LTS SUP circuit breaker, L985.

(4) Check that the GROUND SERVICE control switch on the forward steward's panel is at ON.

(5) Check that all fluorescent tubes in the toilet are lit.

(6) Switch off and disconnect electrical ground power as detailed in 24-41-00.

5. Toilet Door Microswitch (Ref. Fig. 401)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Isolate the toilet main lighting power supply by tripping the TOILET MAIN LTS SUP circuit breaker L985, on panel 14-216, map ref.C10. Fit a circuit breaker safety clip.

RB C. Remove

RB (1) Remove screws (2) from the vertical face of the
RB fore-and-aft bulkhead (10).

RB (2) With care ease away the brush seal capping strip (1).

RB (3) Remove screws (3) from the switch box (4).

RB NOTE: There will be sufficient cable loom to ease switch
RB box out, giving access to change microswitches.

RB (4) Carefully slide switch box (4) out from aperture in
RB fore-and-aft bulkhead.

RB (5) Support the switch box and remove the screws (5) from
RB coverplate (7) giving access to microswitches.

RB NOTE: Mark spade connectors for location purposes.

RB (6) Ease spade connectors off microswitch pins.

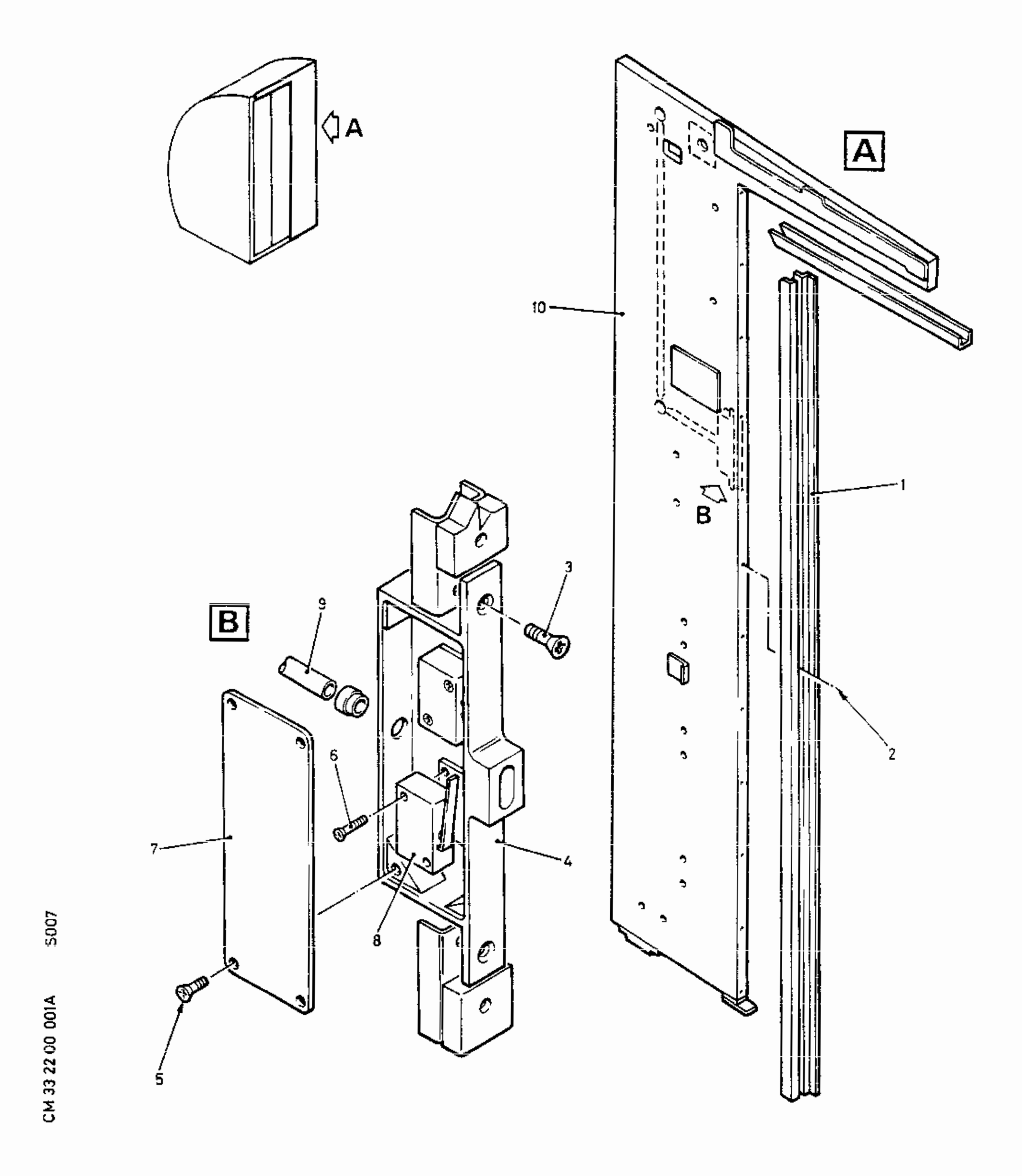
RB (7) Remove screws (6) and ease out microswitch from switch
RB box (4).

D. Install

(1) Comply with the electrical safety precautions.

RB (2) Position microswitch (8) in switch box (4) and secure
RB with screws (6).

RB (3) Push on wire spades to appropriate microswitch
RB connections.



Toilet Door Microswitch - Installation
Figure 401

RB (4) Position switch box cover (7) and install screws
RB (3).

RB (5) Slide switch box (4) and ease cable loom (9) into aperture
RB and secure with screws (3).

RB (6) Position brush seal capping against vertical edge of
RB fore-and-aft bulkhead, secure with screws.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the TOILET MAIN LTS SUP circuit breaker, L985.

(3) Set the GROUND SERVICE control switch on the forward steward's control panel to "OFF", and check that:

(a) with the toilet door open, one fluorescent tube is lit and all other tubes are out,

(b) with the toilet door closed and bolted, all fluorescent tubes are lit,

(c) with all the central toilet doors closed and bolted, the 'toilets occupied' signs at the rear end of the forward cabin and the forward end of the rear cabin are lit or, with the forward toilet door closed and bolted the 'toilets occupied' signs at the forward end of the forward cabin are lit.

(4) Set the GROUND SERVICE control switch on the forward steward's control panel to "ON".

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

RB
RB

R

TOILET LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

R

1. General

This topic details the procedure for an Operational Test only. Functional and System Tests are not considered necessary in this application.

2. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Check that the GROUND SERVICE control switch on the forward steward's panel is at ON.

C. Test

(1) Check that all fluorescent tubes in each toilet are lit, regardless of the toilet door position.

(2) Set the GROUND SERVICE control switch to OFF. In each toilet check that:

(a) with the toilet door open, only one fluorescent tube is lit, and all other fluorescent tubes are out, and

(b) with the toilet door closed and bolted, all fluorescent tubes are lit.

R

(3) Trip the a.c. power failure relay supply circuit breaker L451, on panel 14-216, map ref. B9, and fit a safety clip.

R

(4) In each toilet, check that the standby filament lamp is lit.

(5) Remove the safety clip and reset the a.c. power failure relay supply circuit breaker L451, on panel 14-216.

(6) In each toilet, check that the standby filament lamp is extinguished.

D. Conclusion

(1) Set the GROUND SERVICE control switch on the forward steward's panel to ON.

(2) Switch off and disconnect electrical ground power as detailed in 24-41-00.

BOARDING, VESTIBULE AND SUPPLEMENTARY GALLEYS LIGHTING - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

Boarding lamps, to illuminate the door thresholds, are fitted near floor level on the bulkheads on each side of the forward and centre passenger doors. Vestibule lighting is provided by two lanterns in the forward vestibule and one lantern each in the centre and rear vestibule ceilings.

The boarding lights are controlled by an associated switch on a stewards' control panel in the forward and centre vestibules. Control of vestibule lights is by a switch on the associated stewards' control panel at which filament (DIM) or fluorescent (BRIGHT) lighting can be selected. In the event of an a.c. power failure, with BRIGHT lighting selected at the control switch, the filament dim lighting is automatically switched on to provide vestibule illumination.

If the 'no smoking' signs are activated (Ref. 33-21-00 and 33-25-00) the filament lamps in each vestibule lantern are lit regardless of the position of the vestibule light control switch.

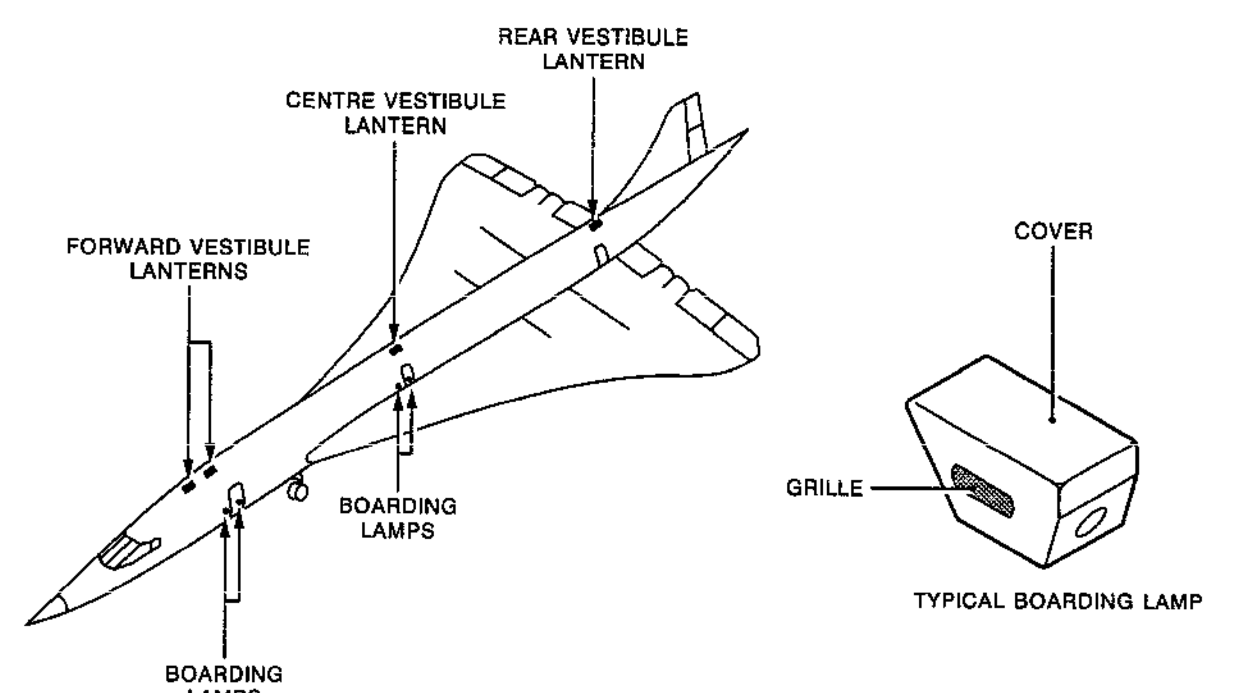
Electrical supplies to provide lighting for the supplementary galleys located close to the forward and rear vestibules, are available at electrical connectors mounted on bulkheads close to the associated galley.

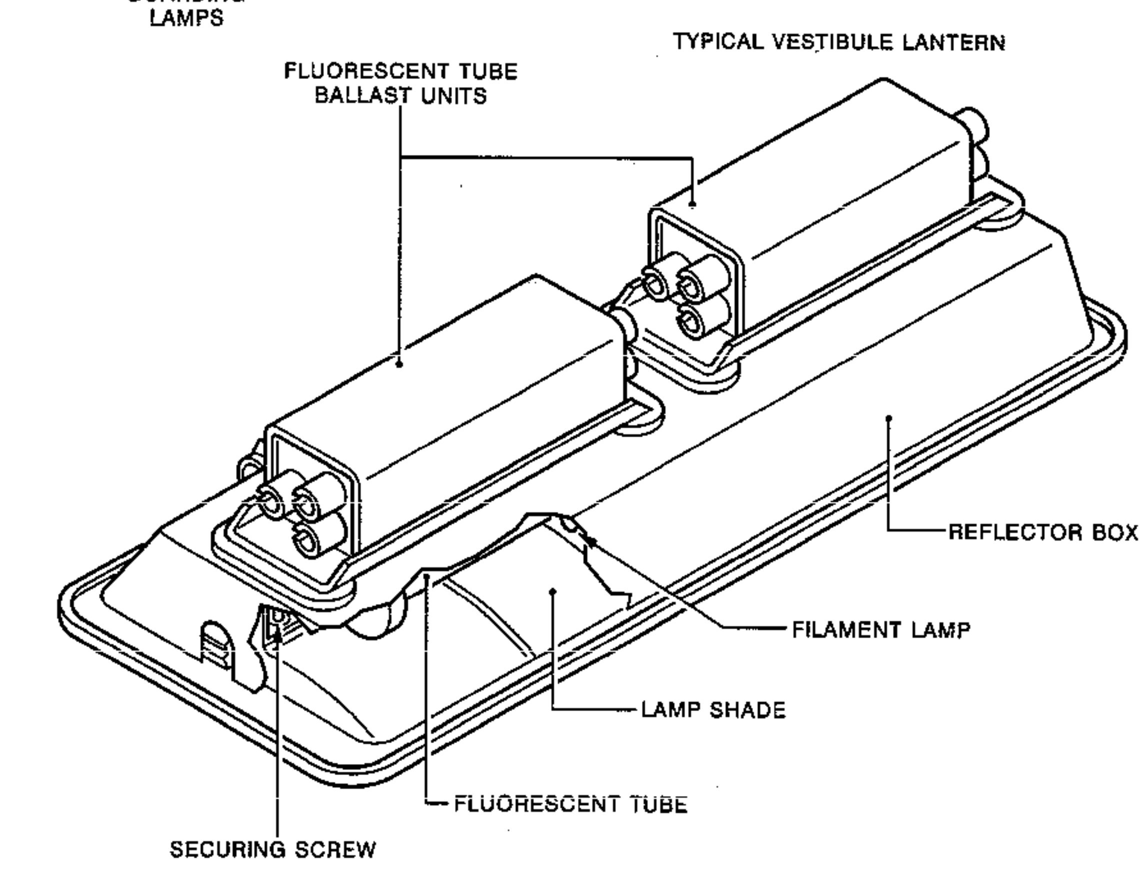
2. Boarding Lamps

Each boarding lamp comprises a filament lamp contained in a glass-fibre assembly with a grille on one side for ventilation and a small aperture at the base to direct the light onto the threshold of the passenger doors. The assemblies are mounted low down on the bulkheads each side of the door in such a manner that a direct light will not be visible to passengers ascending the boarding stairs.

3. Vestibule Lanterns

Each vestibule lantern comprises a reflector box containing two fluorescent tubes, the associated ballast units and two filament
RB lamps. The reflector box aperture is covered by a translucent
RB shade which fits flush with the ceiling furnishings. The shade
RB is secured by two pan head screws with plastic packing washers
RB fitted above the lens to prevent distortion when the screws are
RB tightened.





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RB

Boarding and Vestibule Lights
Figure 001

4. Supplementary Galley Lighting Supplies

A supply of 115 V from No.1 ground/flight 115 V a.c. busbar is available at electrical connectors to light a fluorescent tube in each supplementary galley. One connector is fitted to an amenity stowage bulkhead at the left side of the forward vestibule and there is one at each side of the rear vestibule, close to the associated galley. The source of supply is common with that for vestibule lighting.

When not in use, the connectors are fitted with blanking caps.

5. Operation

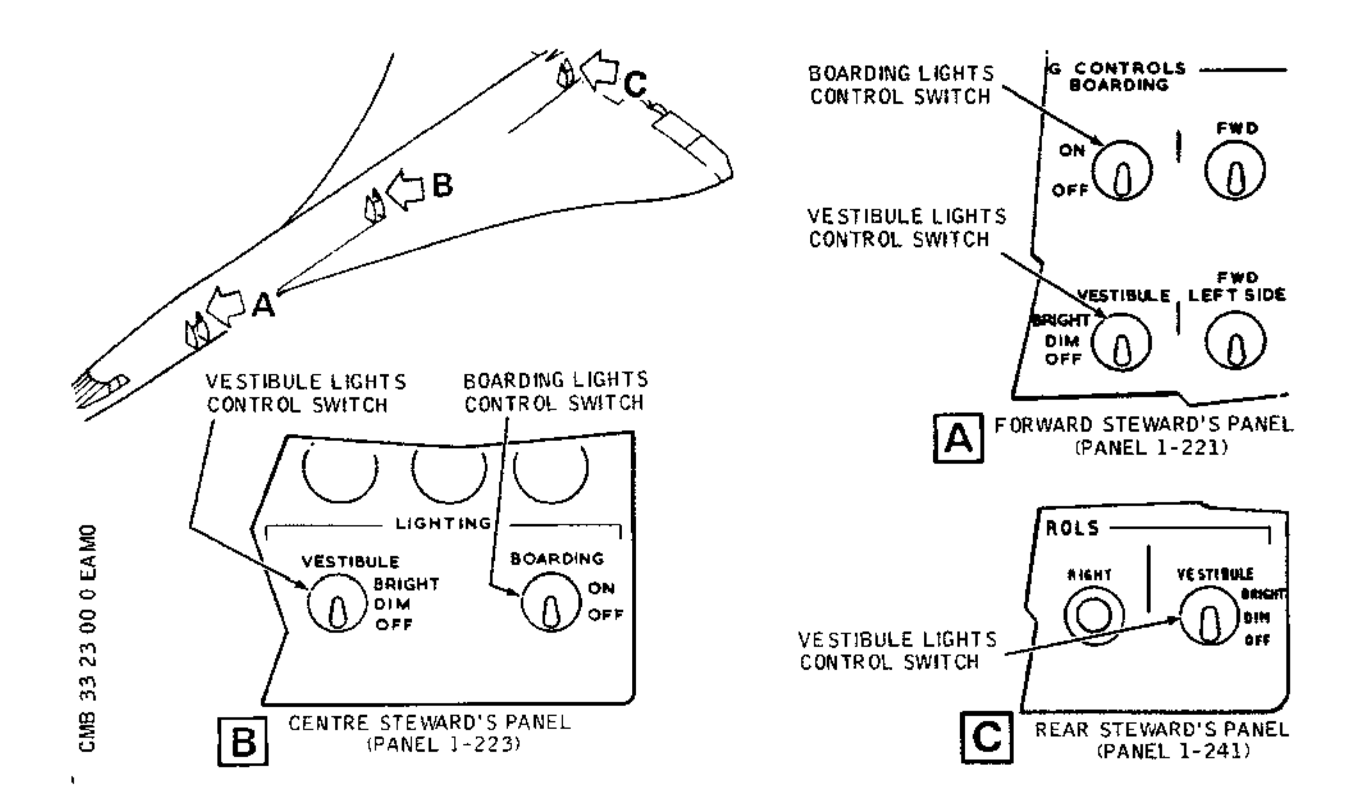
A. Control (Ref. Fig. 002)

The boarding lamps are supplied from the ground power services 28 V a.c. busbar and are controlled by a two-position (ON - OFF) toggle switch engraved BOARDING, one on the steward's control panel in each of the forward and centre vestibules.

The fluorescent tubes and the filament lamps in the vestibule lanterns are supplied from the No.1 ground/flight 115 V a.c. busbar and the 'B' essential 28 V d.c. busbar respectively. The lantern lights are controlled by a double-pole three-position (OFF - DIM - BRIGHT) toggle switch, engraved VESTIBULE, on each steward's control panel. One pole of the switch controls the a.c. supply to the fluorescent tubes, and the other the d.c. supply to the filaments.

Two further d.c. power supplies are available from the 'B' essential 28 V d.c. busbar to control filament dim lighting. One supply is connected to the filament lamps in each vestibule lantern through a normally open contact of a passenger warning/standby light relay (Ref. 33-21-00) and bypasses the vestibule light control switches; the other supply is connected to the 'bright' terminal of each vestibule light control switch through a contact of an a.c. power failure relay which is open when the relay is energized.

The a.c. power failure relay is supplied from No.1 ground/flight 115 V a.c. busbar, and is mounted in the box of the forward vestibule steward's control panel.



- Boarding and Vestibule Lights Control
Figure 002

B. Functional Description (Ref. Fig. 003)

With electrical supplies available and DIM selected at a vestibule lights control switch, the 28 V d.c. supply is connected through one pole of the switch to light the filament lamps in the associated vestibule lantern(s).

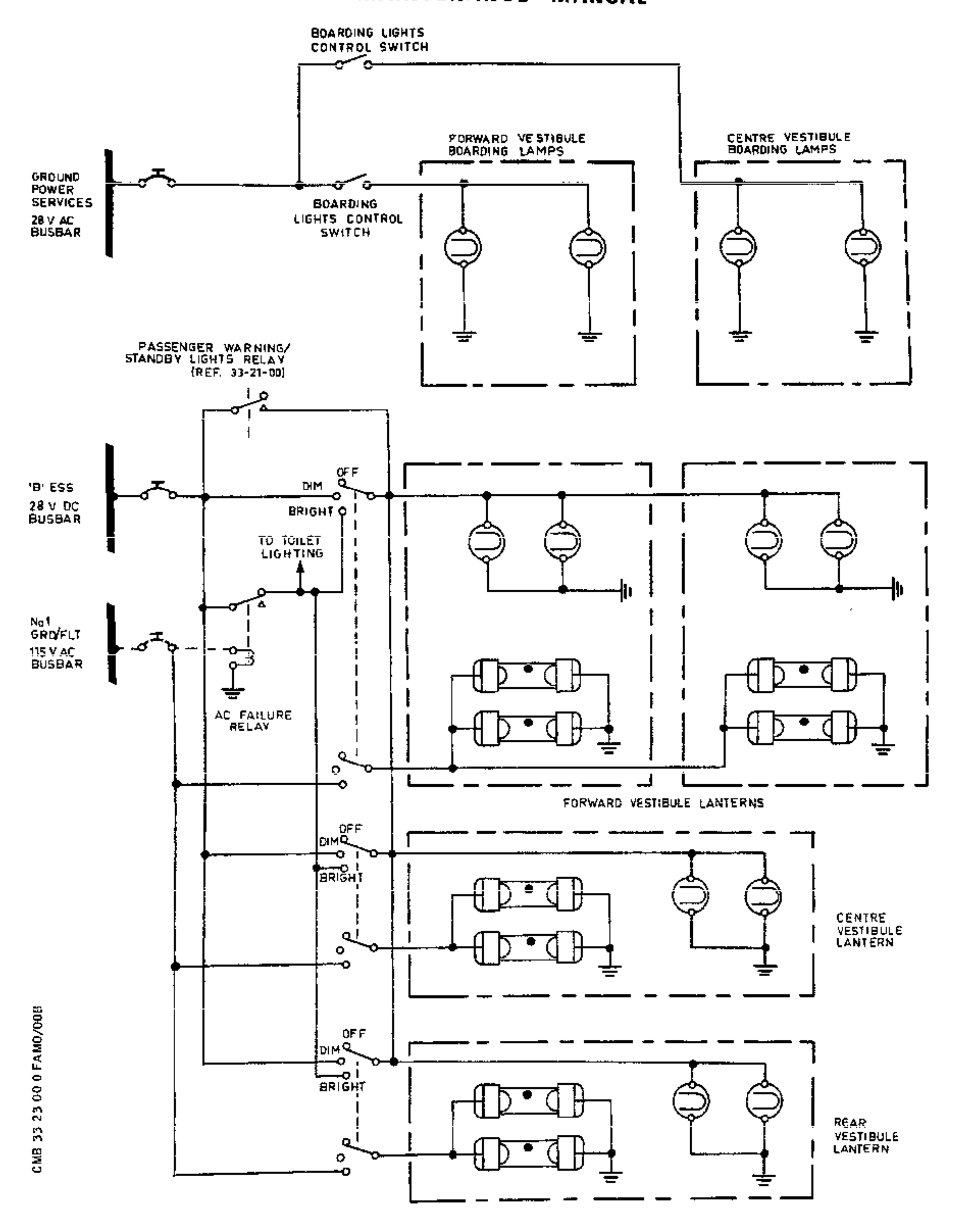
When BRIGHT is selected at a vestibule lights control switch, the 28 V d.c. supply is interrupted and a supply from the ground/flight 115 V a.c. busbar is connected through the second pole of the switch to light the fluorescent tubes in the associated vestibule lantern(s).

A failure of the 115 V a.c. power supply will de-energize the a.c. power failure relay to complete the circuit from the essential 28 V d.c. busbar, through the vestibule light control switch, to light the vestibule lantern filament lamps.

Initiation of a 'no smoking' warning (Ref. 33-25-00 and 33-21-00) energizes the passenger warning/standby lights relay and completes the circuit from the essential 28 V d.c. busbar, direct to the vestibule lantern filament circuits to light the filament lamps.

Power is available at the boarding lights control switches only when ground power is connected to the aircraft.

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- Boarding and Vestibule Lights -
Simplified Schematic
Figure 003

BOARDING, VESTIBULE AND SUPPLEMENTARY GALLEYS LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

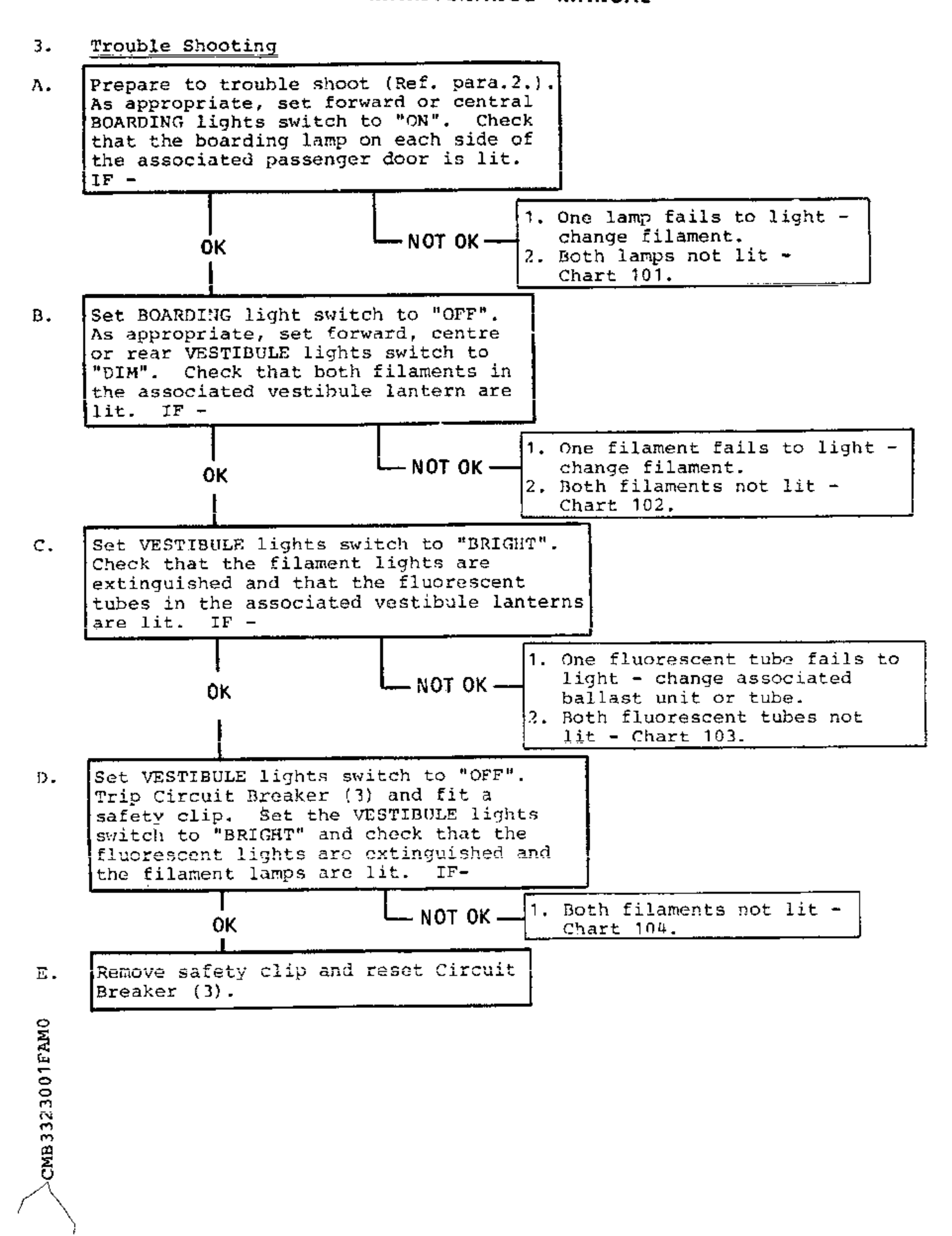
The forward, centre and rear vestibule lighting circuits are similar, therefore the procedures and charts are applicable to each. The boarding lights circuits in the forward and centre vestibules are similar, therefore the procedures and charts are applicable to either. Where identical components are involved, i.e., one in each circuit, references to the associated components listed in Table 101 are given thus, 'Renew Switch (6), (7) or (8)'.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

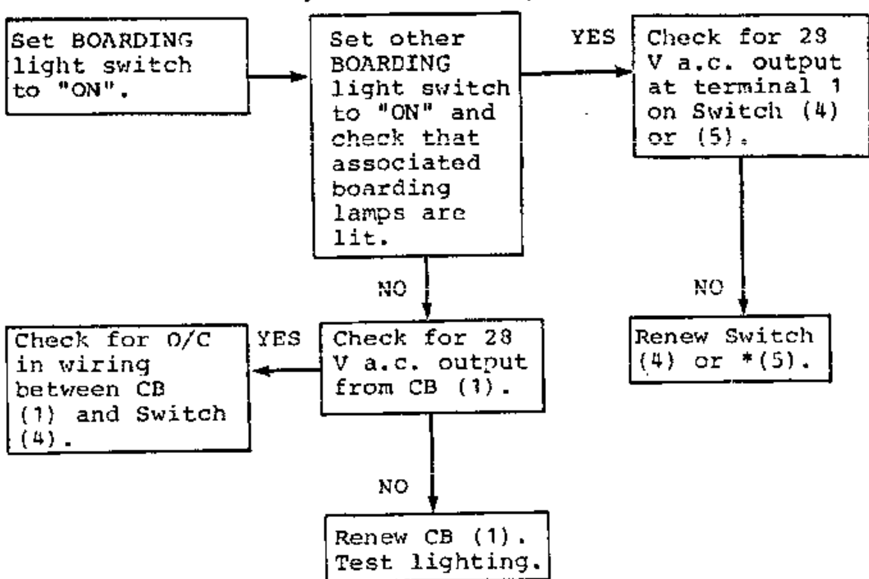
3. Trouble Shooting



BOARDING LAMPS NOT LIT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.



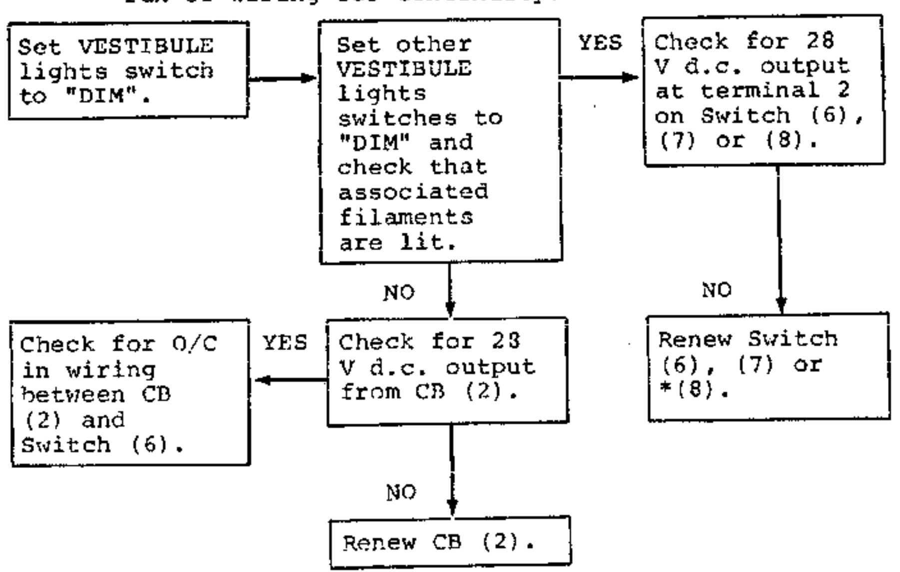
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Chart 101

BOTH FILAMENTS IN VESTIBULE LANTERN NOT LIT WHEN VESTIBULE LIGHTS SWITCH AT 'DIM'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.



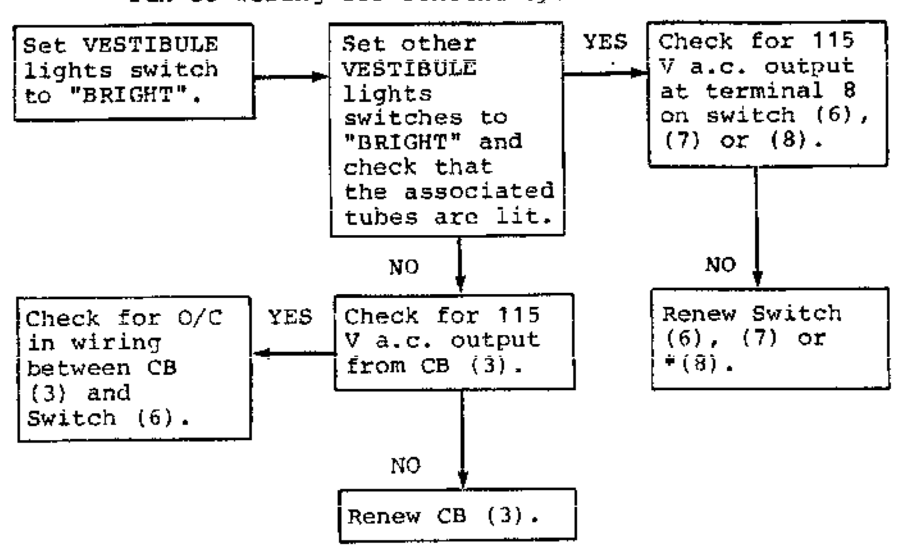
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Chart 102

BOTH FLUORESCENT TUBES IN VESTIBULE LANTERN NOT LIT WHEN VESTIBULE LIGHT SWITCH AT 'BRIGHT'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.



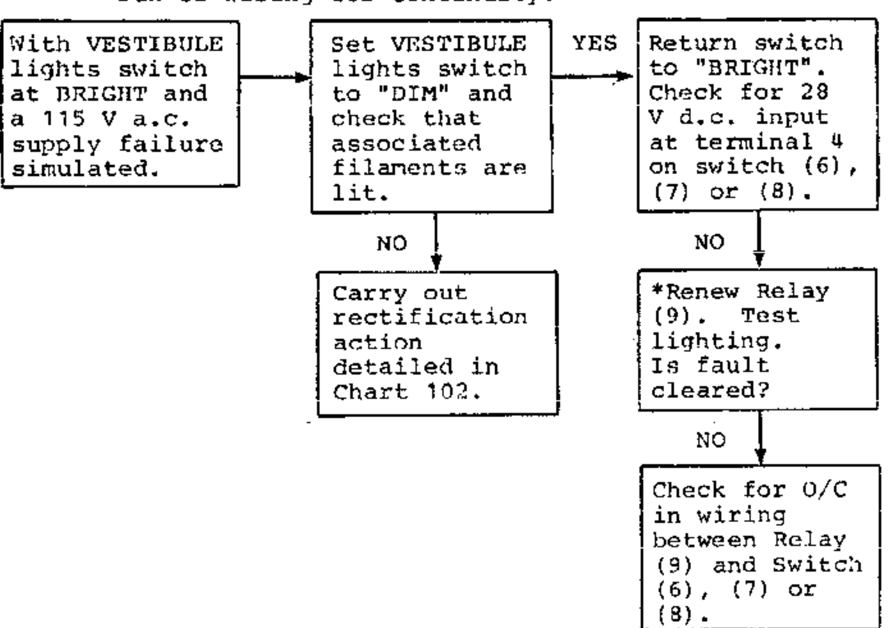
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Chart 103

BOTH FILAMENTS IN VESTIBULE LANTERN NOT LIT DURING AN AC POWER FAILURE, WITH VESTIBULE LIGHTS SWITCH AT 'BRIGHT'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.



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Chart 104

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit breaker 28 V	-	25-216	L692	Map ref.C1	24-50-00 R/I	
(2) Circuit breaker 28 V	-	5-213	L455	Map ref.D19	24-50-00 R/I	
(3) Circuit breaker 115 V	-	14-215	L232	Map ref.C11	24-50-00 R/I	
(4) Forward boarding lights switch	-	1-221	L696	Forward vestibule	33-23-00 R/I	
(5) Central boarding lights switch	-	1-223	L697	Centre vestibule	33-23-00 R/I	
(6) Forward vestibule lights switch	-	1-221	L693	Forward vestibule	33-23-00 R/I	
(7) Central vestibule lights switch	-	1-223	L694	Centre vestibule	33-23-00 R/I	
(8) Rear vestibule lights switch	-	1-241	L695	Rear vestibule	33-23-00 R/I	
(9) AC failure relay	-	1-221	L698	Forward vestibule	33-23-00 R/I	

Component Identification
Table 101

BOARDING, VESTIBULE AND SUPPLEMENTARY GALLEYS LIGHTING-REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

(Ref. Fig. 401)

1. General

This topic contains instructions for the renewal of fluorescent tubes and filaments associated with boarding and vestibule lighting, and for the removal and installation of vestibule lanterns and associated ballast units.

Each vestibule lantern contains two fluorescent tubes and two standby filaments. The two associated ballast units are mounted on top of the lantern reflector which necessitates the removal of the complete lantern assembly from the vestibule roof to gain access to a ballast unit.

A boarding lamp, comprising a filament protected by a cover, is mounted low down on the bulkhead on each side of the forward and centre vestibule passenger doors.

Instructions for the removal and installation of boarding and vestibule lighting control switches and an associated 'a.c. failure' relay are contained in 33-20-00.

2. Fluorescent Tube and Standby Filament Renewal

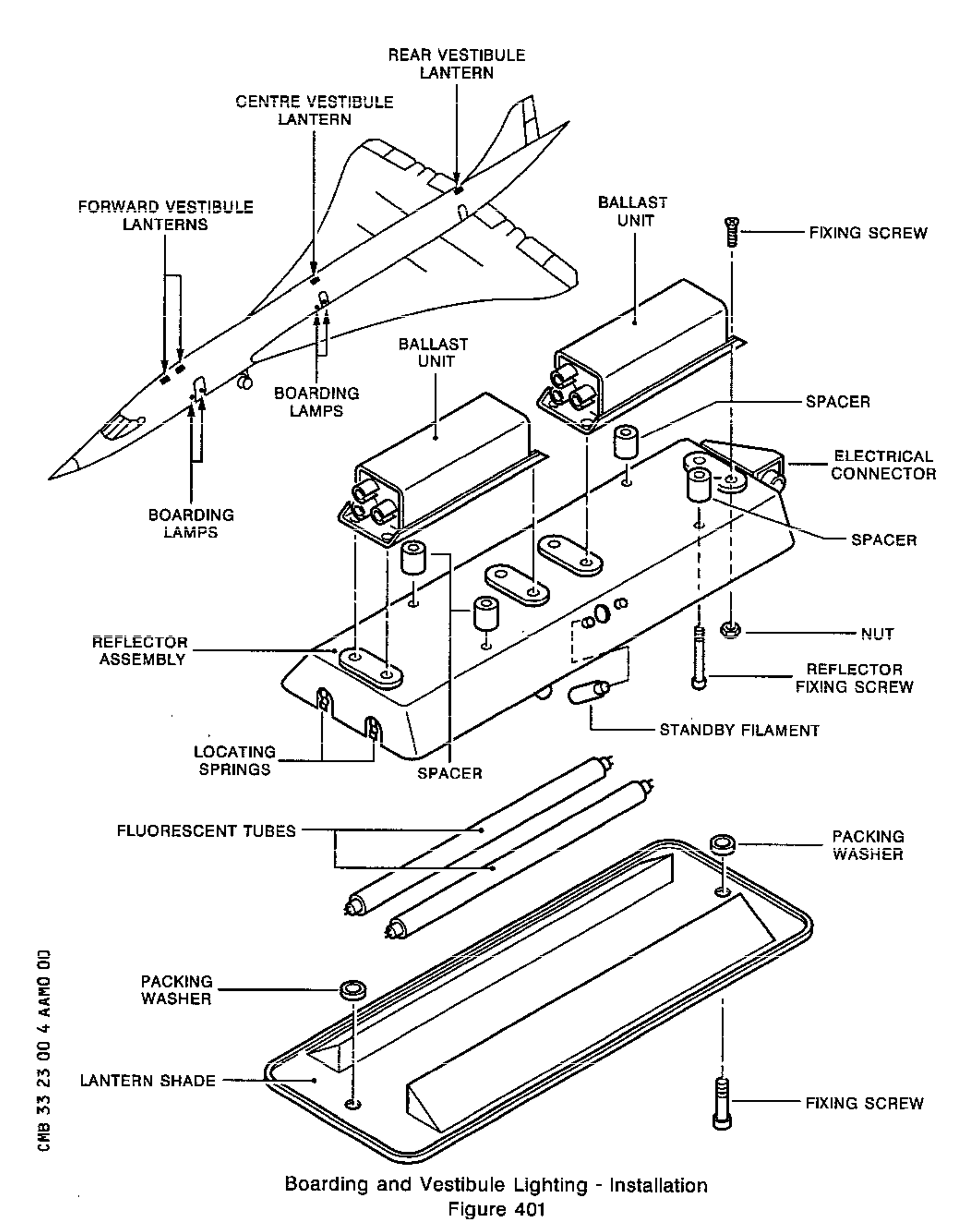
A. Prepare

(1) For fluorescent tube renewal, set the VESTIBULE light switch on the forward, centre or rear stewards' control panel, as appropriate, to "OFF".

(2) For standby filament renewal, set the VESTIBULE light switch on the forward, centre and rear stewards' control panel, to "OFF".

RB (3) Unscrew the two pan head screws and remove the lantern
RB shade together with the plastic packing washers fitted
RB above the lens.

RB



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RB

Boarding and Vestibule Lighting - Installation
Figure 401

B. Renew Fluorescent Tube

(1) Rotate the fluorescent tube and pull it downward to disengage the tube from the end connectors.

(2) Fit a replacement.

C. Renew Standby Filament

(1) Remove the standby filament and fit a replacement.

D. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Set the appropriate VESTIBULE light switch to "BRIGHT" and check that the fluorescent tube is lit, or set the VESTIBULE light switch to "DIM" and check that the filament is lit, as applicable. Return the switch to "OFF".

(3) Switch off and disconnect electrical ground power as detailed in 24-41-00.

RB (4) Fit the two pan head retaining screws and packing
RB washers to the lantern shade. Position the lantern
RB shade on the light reflector and tighten the two
RB retaining screws ensuring that the packing washers are
RB not dislodged.

RB

3. Boarding Lamp Filament Renewal

A. Prepare

(1) Set the BOARDING light switch on the forward or centre stewards' control panel, as appropriate, to "OFF".

(2) Remove the screw, at the bottom of the boarding lamp, securing the lamp cover to the baseplate. Pull downward on the cover, to release it from the locating spigot on the adjustable console fairing, and remove the cover from the baseplate.

B. Renew Boarding Lamp Filament

(1) Remove the boarding lamp filament and fit a replacement.

C. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Set the appropriate BOARDING light switch to "ON" and check that the boarding lamp filament is lit. Return the switch to "OFF".

(3) Switch off and disconnect electrical ground power as detailed in 24-41-00.

(4) Position the boarding lamp cover on the baseplate and push upward to engage the locating spigot. Secure the cover to the baseplate with the screw, at the bottom of the cover.

4. Vestibule Lantern and Ballast Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Set the VESTIBULE light switch on the forward, centre or rear stewards' control panel, as appropriate, to "OFF".

(2) Trip the FLT DECK ROOF LTS SUP circuit breaker, L232, on panel 14-215, map ref. C11, and the CABIN NIGHT LTS SUP circuit breaker, L455, on panel 5-213, map ref. D19, and fit safety clips.

C. Remove Vestibule Lantern

RB (1) Unscrew the two pan head screws and remove the lantern
RB shade together with the plastic packing washers fitted
RB above the lens.

(2) Remove the two fluorescent tubes and filaments.

(3) Support the lantern and release the four screws securing the reflector to the vestibule roof. Lower the lantern to the extent of the electrical cables, ensuring that the locating springs on the reflector are clear of the associated ceiling panels. Remove the securing screws, washers and spacers.

(4) Disconnect the electrical connector from the lantern.

(5) Disconnect the bonding lead from the ballast unit securing screw, and remove the lantern, complete with ballast units, from the vestibule roof.

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RB

D. Remove Ballast Unit from Vestibule Lantern

(1) Disconnect the electrical cables from the ballast unit.

(2) Remove the screws and nuts securing the ballast unit to the top of the lantern reflector and remove the ballast unit from the reflector.

E. Install Ballast Unit in Vestibule Lantern

(1) Fit the ballast unit to its mounting on top of the vestibule lantern reflector and secure it with the screws and nuts.

(2) Connect the electrical cables to the ballast unit, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

F. Install Vestibule Lantern

(1) Comply with the electrical safety precautions.

(2) Support the vestibule lantern and connect the bonding lead to a ballast unit fixing screw. Tighten the screw.

(3) Connect the electrical connector to the vestibule lantern, ensuring that the mating surfaces are clean and undamaged.

(4) Check that the ballast unit and lantern are bonded in accordance with 20-27-11.

(5) Position the lantern (Ref. Fig. 401) on its mounting in the vestibule roof, ensuring that the associated ceiling panel engages in the locating springs at each end of the light reflector. Secure the lantern with the screws, washers and spacers.

RB

(6) Refit the fluorescent tubes and filaments to the lantern reflector.

G. Conclusion

(1) Remove the safety clips and reset the circuit breakers tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Set the appropriate VESTIBULE light switch to "BRIGHT" and check that both fluorescent tubes are lit.

(4) Set the VESTIBULE light switch to "DIM" and check that the fluorescent tubes are out and that both standby filaments are lit. Return the switch to "OFF".

RB (5) Fit the two pan head retaining screws and packing
RB washers to the lantern shade. Position the lantern
RB shade on the light reflector and tighten the two
RB retaining screws ensuring that the packing washers are
RB not dislodged.
RB

(6) Switch off and disconnect electrical ground power as detailed in 24-41-00.0

BOARDING VESTIBULE AND SUPPLEMENTARY GALLEYS LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Boarding and vestibule lights tests are contained under two headings: Operational Test, and Functional Test. A System Test is not considered necessary. The Operational Test details the procedure for checking the operation of the boarding and vestibule lights. The Functional Test checks the vestibule lights in more detail to prove that they are electrically and functionally correct.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test Boarding Lights

(1) Set the BOARDING lights control switch on the forward vestibule steward's control panel to "ON", and check that the boarding lamp on each side of the forward passenger door is lit and illuminates the door threshold.

(2) Set the BOARDING lights control switch to "OFF".

(3) Set the BOARDING lights control switch on the centre vestibule steward's control panel to "ON" and check that the boarding lamp on each side of the central passenger door is lit and illuminates the door threshold.

(4) Set the BOARDING lights control switch to "OFF".

C. Test Vestibule Lights

(1) Set the VESTIBULE lights control switch on the forward steward's control panel to "DIM", and check that the two filament lamps in each of the two forward vestibule lanterns are lit.

(2) Set the VESTIBULE lights control switch to "BRIGHT", and check that the filament lights are extinguished and the two fluorescent tubes in each of the forward

vestibule lanterns are lit.

(3) Set the VESTIBULE lights control switch to "OFF" and check that the filament and fluorescent lights in each lantern are extinguished.

(4) Repeat operations (1) to (3) from the centre and rear vestibule steward's panels, in turn, to test the associated centre and rear vestibule lanterns.

D. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

C. Test Vestibule Lights

(1) Check that the VESTIBULE lights control switch on the forward vestibule steward's control panel is at OFF.

(2) Electrically isolate the supplies to the a.c. power failure relay by tripping the FLT DECK ROOF LTS SUP circuit breaker L232, on panel 14-215, map ref.C11, and fit a safety clip.

(3) Set the VESTIBULE lights control switch on the forward steward's panel to "DIM". Check that the two filament lamps in each of the two forward vestibule lanterns are lit.

(4) Set the VESTIBULE lights control switch to "BRIGHT". Check that the filament lamps in the vestibule lanterns remain lit, and that the fluorescent tubes remain unlit.

(5) Remove the safety clip and reset the FLT DECK ROOF LTS SUP circuit breaker. Check that the filament lamps in each forward vestibule lantern are extinguished and that the fluorescent tubes are lit.

(6) Set the VESTIBULE lighting control switch to "OFF".

(7) Repeat operations (1) to (7) from the centre and rear steward's panels, in turn, to test the associated centre and rear vestibule lanterns.

D. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

WARDROBE LIGHTS - MAINTENANCE PRACTICES

1. General

A. Each wardrobe is provided with an internal illumination flood light. The light is mounted in the roof panel of the wardrobe.

B. The light has two 28V 8W lamps.

C. Control of the lamps is provided automatically by a microswitch operated by the righthand wardrobe door.

D. Power supplies for the lamps are derived from the adjacent reading light supply.

2. Relamping

A. Isolate the power supply to the relevant wardrobe, see Table 201.

WARNING: OBSERVE ELECTRICAL PRECAUTIONS DETAILED IN 24-00-00.

WARDROBE	CIRCUIT BREAKER	LOCATION
LH FWD	L890 Reading lt. fwd left	1-221
RH FWD	L889 Reading lt. fwd right	1-221
LH MID	L897 Reading lt. aft left	1-241
RH MID	L894 Reading lt. aft right	1-241

TABLE 201

B. Access to the filament is gained by removing the screws in either end of the lamp bezel. The lamp can then be replaced in the normal fashion.

C. Refit bezel.

D. Reset circuit breakers and check operation of lamp.

3. Lamp Unit Removal/Installation

A. Isolate electrical supplies as appropriate. See Table 201.

B. Remove bezel.

C. Remove a further 4 screws to release the reflector with the lamp holder attached.

D. Disconnect the wire to the lamp holders.

E. Pass the cables through the grommet.

F. Remove the lamp housing.

G. Replacement is the reverse of the above procedure.

4. Door Operated Microswitch

A. General

(1) A door operated microswitch controls the interior wardrobe flood light.
(2) The microswitch is operated by a block attached to the upper righthand corner of the righthand double door.
(3) The switch is mounted under a cover for protection and cosmetic purposes.

B. Removal/Replacement

(1) Isolate electrical supplies see Table 201.
(2) Remove cover over microswitch.
(3) Disconnect wiring to switch - ensure wires are identified for replacement.
(4) Remove the microswitch.
(5) Replacement is the reverse of removal.

C. Adjustment

(1) No adjustment is specified for this microswitch.

PASSENGER READING LIGHTS - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

Passengers are provided with individual reading lamps mounted on passenger service units (PSUs) fitted above each row of passenger seats on both sides of the aircraft. Each light is controlled by a push-switch mounted close to the reading lamp. Four transformers, two at the forward steward's position and two at the rear steward's position, provide outputs to supply all the reading lamps in the forward and rear cabins respectively.

2. Reading Lamps

Two reading lamps are fitted in each PSU, each lamp comprising a spherical filament housing which moves in a mounting constructed on the ball-and-socket principle. Each lamp is fitted with a hinged translucent lens which is retained in the closed position by a small retaining catch.

The ball-and-socket mounting allows the filament housing to move 45 deg laterally and 18 deg fore and aft. The hinged lens facilitates filament replacement.

3. Transformers

R Four 600 VA step-down transformers are associated with the reading lamps.

Two transformers mounted in the forward steward's panel are connected to No.3 main 115 V a.c. busbar, and supply 28 V d.c. for the reading lamps on the left and right sides of the forward cabin.

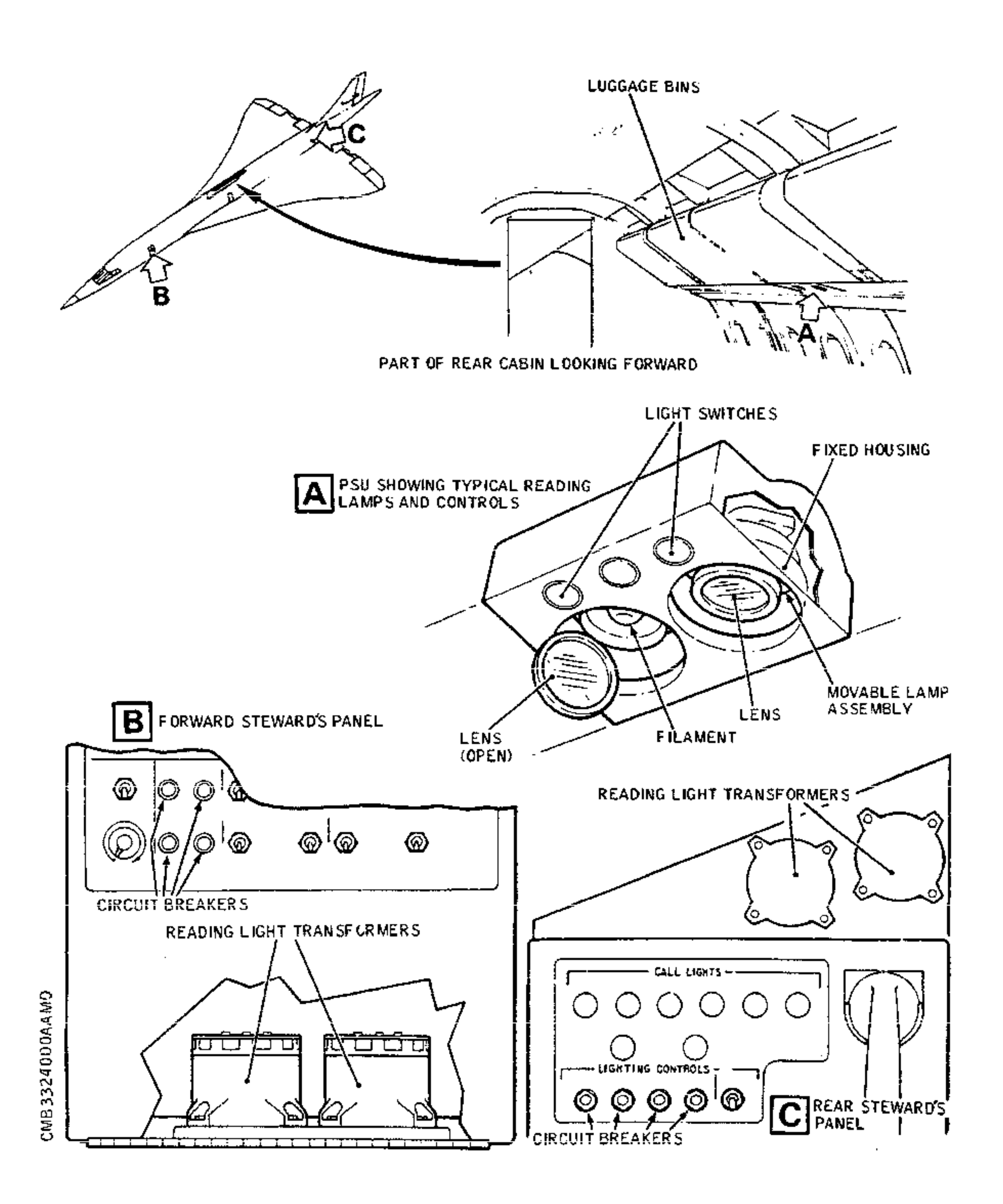
Two transformers mounted above the rear steward's panel are connected to No.2 main 115 V a.c. busbar, and supply 28 V d.c. for the reading lamps on the left and right sides of the rear cabin.

4. Operation

A. Control

The supply for the reading lamps is controlled by a push-to-make push-to-break switch mounted close to each reading lamp.

B. Functional Description



- Passenger Reading Lights -
Control and Equipment
Figure 001

When electrical supplies are available and a reading lamp switch is pressed and released, a supply is connected to the associated filament lamp. The lamp supply is terminated when the switch is pressed and released once again.

R

R 5. Electrical Power Supplies

The passenger reading lamps in the forward passenger cabin are supplied (primarily) from the No.3 main 115 V a.c. busbar, through circuit breakers on panel 13-216 and on the forward steward's control panel. The reading lamps in the rear cabin are supplied (primarily) from No.2 main 115 V a.c. busbar, through circuit breakers on panel 13-215 and on the rear steward's control panel.

PASSENGER READING LIGHTS - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

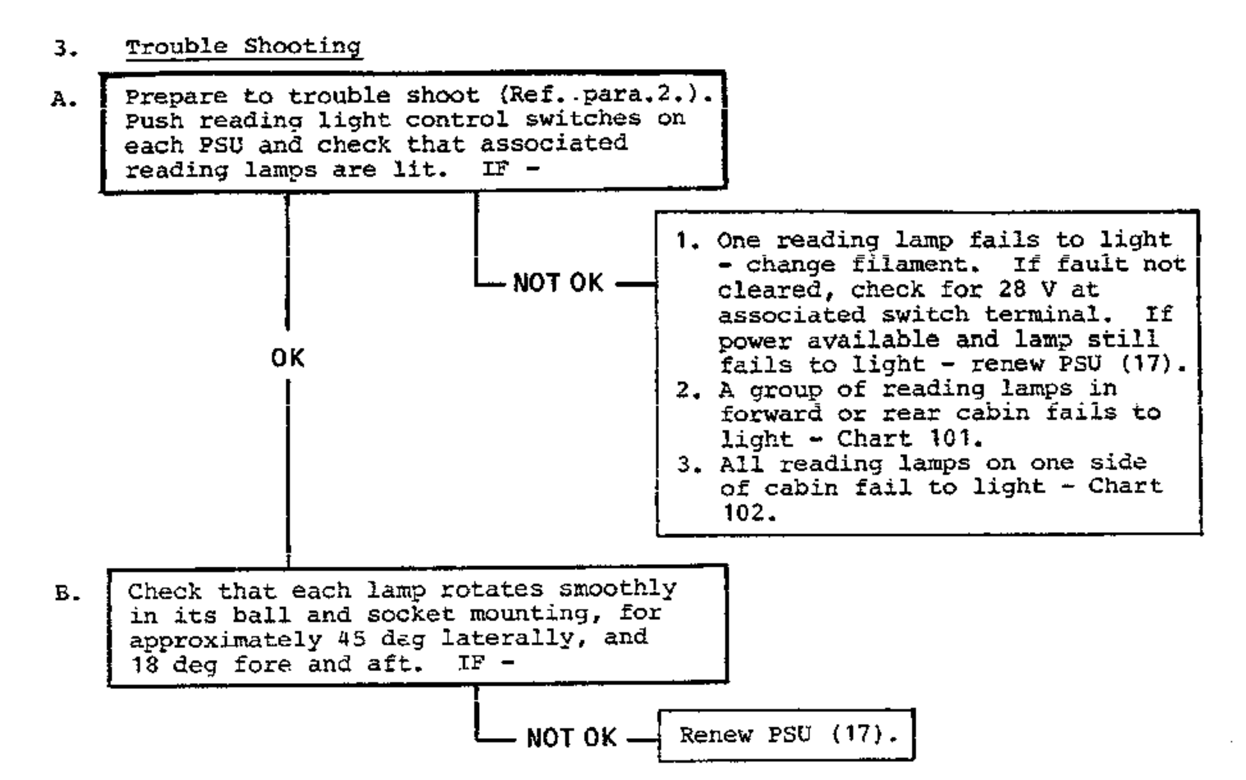
The lighting circuits for the reading lamps on the left and right sides of the forward and rear passenger cabins are similar, therefore the procedures and charts are applicable to each. Where identical components are involved, i.e., one in each circuit, the references to the associated components listed in Table 101 are given thus, 'Renew Transformer (13) or (14), fwd. cabin, or Transformer (15) or (16), rear cabin'.

2. Preparation

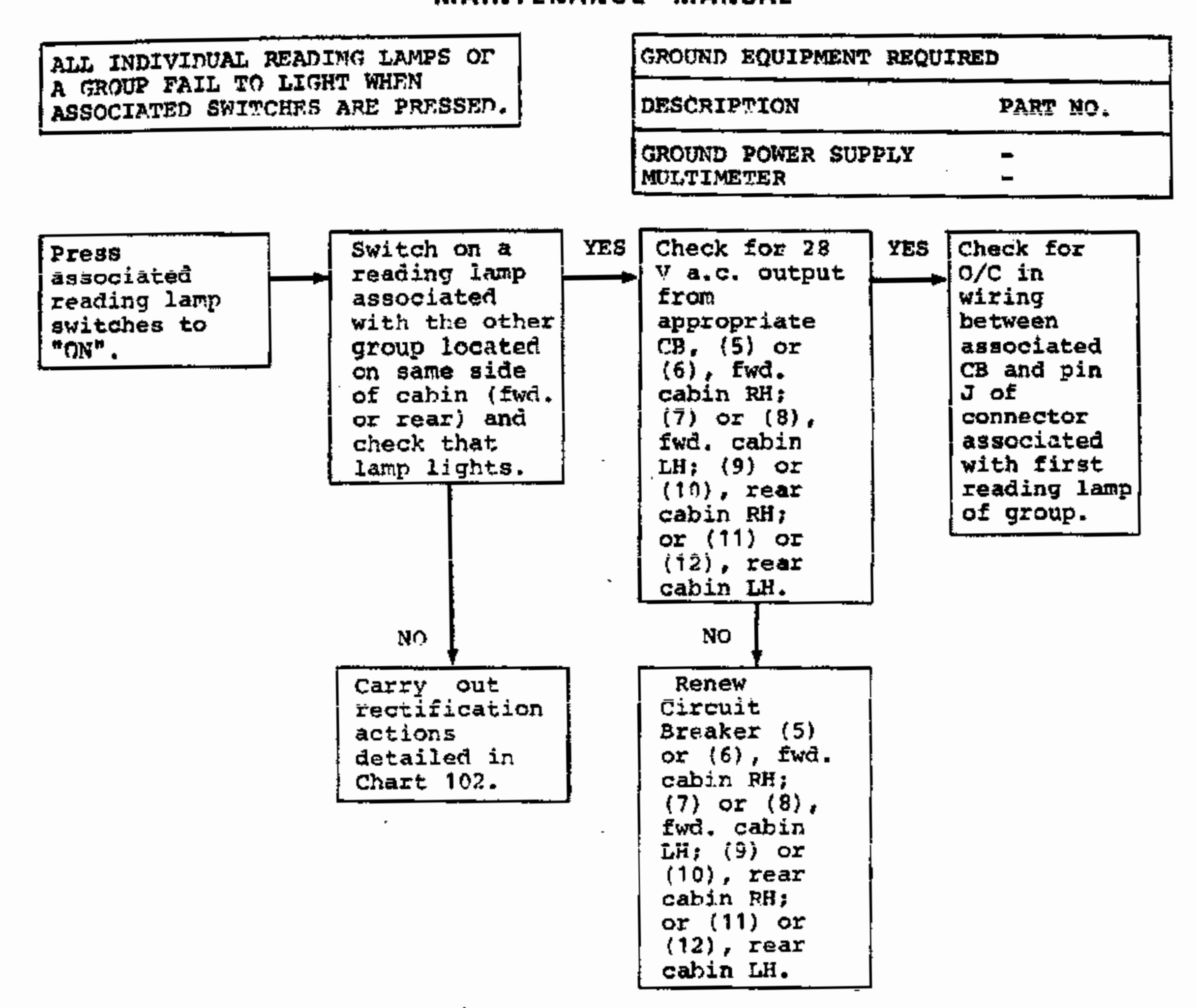
A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting



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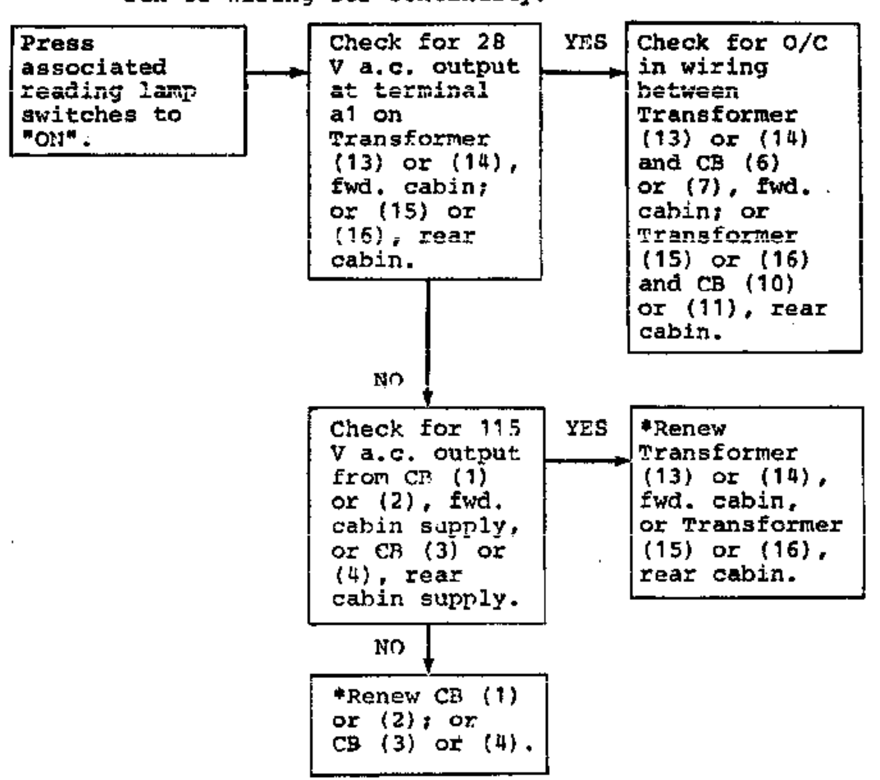
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Chart 101

ALL INDIVIDUAL READING LAMPS ON ONE SIDE OF CABIN (FWD. OR REAR) FAIL TO LIGHT WHEN ASSOCIATED SWITCHES ARE PRESSED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.



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Chart 102

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ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit breaker 115 V	-	13-216	L884	Map ref.C8	24-50-00 R/I	
(2) Circuit breaker 115 V	-	13-216	L885	Map ref.C9	24-50-00 R/I	
(3) Circuit breaker 115 V	-	13-215	L886	Map ref.E11	24-50-00 R/I	
(4) Circuit breaker 115 V	-	13-215	L887	Map ref.E12	24-50-00 R/I	
(5) Circuit breaker 28 V	-	1-221	L888	Fwd. steward's panel	24-50-00 R/I	
(6) Circuit breaker 28 V	-	1-221	L889	Fwd. steward's panel	24-50-00 R/I	
(7) Circuit breaker 28 V	-	1-221	L890	Fwd. steward's panel	24-50-00 R/I	
(8) Circuit breaker 28 V	-	1-221	L891	Fwd. steward's panel	24-50-00 R/I	
(9) Circuit breaker 28 V	-	1-241	L894	Rear steward's panel	24-50-00 R/I	
(10) Circuit breaker 28 V	-	1-241	L895	Rear steward's panel	24-50-00 R/I	
(11) Circuit breaker 28 V	-	1-241	L896	Rear steward's panel	24-50-00 R/I	
(12) Circuit breaker 28 V	-	1-241	L897	Rear steward's panel	24-50-00 R/I	
(13) 600 VA	-	1-221	L892	Fwd.	33-24-00	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
transformer				steward's panel	R/I	
(14) 600 VA transformer	-	1-221	L893	Fwd. steward's panel	33-24-00 R/I	
(15) 600 VA transformer	-	241	L898	Above rear steward's panel	33-24-00 R/I	
(16) 600 VA transformer	-	241	L899	Above rear steward's panel	33-24-00 R/I	
(17) Passenger service units (PSUs)	-	Vari- ous		Above each Passenger seat in fwd. and rear cabins	25- R/I	

Component Identification
Table 101

PASSENGER READING LIGHTS - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic details the operations necessary for the replacement of passenger reading lamp filaments and for the removal and installation of the reading lamp 600 VA transformers.

Two transformers supplying the forward cabin reading lamps are mounted in the box behind the forward steward's control panel, and two transformers, supplying the rear cabin reading lamps, are mounted above the rear steward's control panel.

The outputs of the transformers at the forward steward's station are connected to circuit breakers engraved READING - FWD CABIN LEFT and READING - FWD CABIN RIGHT on the forward steward's control panel. The outputs of the transformers at the rear steward's station are connected to circuit breakers engraved READING LIGHT CIRCUIT BREAKERS - LEFT and RIGHT on the rear steward's control panel.

Electrical connections are made at terminals on top of each transformer, the terminals being protected by a cover secured to the transformer case by screws.

2. Reading Lamp Filament

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that all reading lights in the forward or rear cabin, as appropriate, are extinguished.

(2) Trip the associated LEFT or RIGHT reading light circuit breakers on the forward or rear steward's control panel, as appropriate, and fit safety clips.

C. Replace Filament

(1) Depress the catch on the side of the reading lamp housing and swing open the lens.

(2) Remove the filament and fit a replacement. Close the lens.

D. Conclusion

(1) Remove the safety clips and reset the associated circuit breakers.

(2) Push the associated reading light control switch and check that the reading lamp lights.

(3) Push the switch again and check that the light is extinguished.

3. 600 VA Transformer

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

R (1) Trip the RH and LH FWD PASS RDG LTS TRANS SUP
R circuit breakers L884 and L885, respectively,
R on panel 13-216, map refs.C8 and C9, or the RH
R and LH AFT PASS RDG LTS TRANS SUP circuit breakers
R L886 and L887, respectively, on panel 13-215, map
R refs.E11 and E12, and fit safety clips.

C. Remove

(1) Gain access to the forward cabin reading light transformers by opening the forward steward's control panel, or gain access to the rear cabin reading light transformers by opening the panel immediately above the rear steward's control panel.

(2) Remove the transformer terminal cover and disconnect the cables from the terminals.

(3) Refit the terminal cover.

(4) Remove the bolts and washers securing the transformer to its mounting plate and lift the transformer from its housing.

D. Install

(1) Comply with the electrical safety precautions.

(2) Position the transformer on its mounting plate and secure it with the bolts and washers.

(3) Remove the terminal cover from the transformer.

(4) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(5) Refit the terminal cover.

(6) Check that the transformer is bonded in accordance with 20-27-11.

(7) Close and secure the associated panel.

E. Conclusion

R (1) Remove the safety clips and reset the circuit
R breakers tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Push a reading light control switch on the appropriate side of the forward or rear cabin and check that the associated reading lamp lights.

(4) Push the switch again and check that the light is extinguished.

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

PASSENGER READING LIGHTS - ADJUSTMENT/TEST

1. General

This topic contains an Operational Test only, which details the procedure to prove the correct operation of the passenger reading lights in each passenger service unit (PSU). Functional and System Tests are not considered necessary in this application.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test

(1) Push the reading light control switches on each PSU, in turn, and check that the associated reading lamps are lit.

(2) Check that each lamp rotates smoothly in its ball
R and socket mounting, for approximately 45 deg
R laterally, and 18 deg fore and aft.

(3) Adjust each lamp until the light is directed on to the front edge of the associated passenger seat.

(4) Push the reading light control switches again and check that the associated reading lights are extinguished.

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

PASSENGER SIGNS - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

Signs above each row of passenger seats, when illuminated, inform the passengers that smoking is forbidden and seat belts must be fastened. A sign in each toilet, operating in conjunction with the 'fasten seat belts' signs requests
R the occupant to return to seat. Signs close to the toilets, and an additional sign on the forward cabin curtain lintel, indicate toilet availability. A 'toilet occupied' caption is located in the flight compartment for the benefit of crew members.

Warning lamps at each steward's position provide visual indication when the 'no smoking' and 'fasten seat belts' signs are illuminated, and an audible warning relayed through the public address system (Ref. 23-31-00) attracts the stewards' attention to these warning lamps.

The lights, in the 'no smoking' and 'fasten seat belts' signs, are controlled by their respective switches on the flight compartment roof panel.

The lights in the toilet availability signs are controlled by the bolt on each of the associated toilet doors.

If the cabin oxygen supply rises to emergency pressure (Ref. 35-21-00) the 'no smoking' and 'fasten seat belts' signs are automatically lit.

2. 'No Smoking' and 'Fasten Seat Belts' Signs

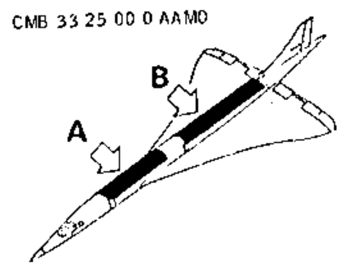
'No smoking' and 'fasten seat belts' sign mounting assemblies are fitted in the loudspeaker panels above each row of seats but staggered so that signs at adjacent seat rows are on opposite sides of the aircraft. The sign filament lamps are mounted behind a translucent sign panel which is hinged to facilitate replacement of filaments.

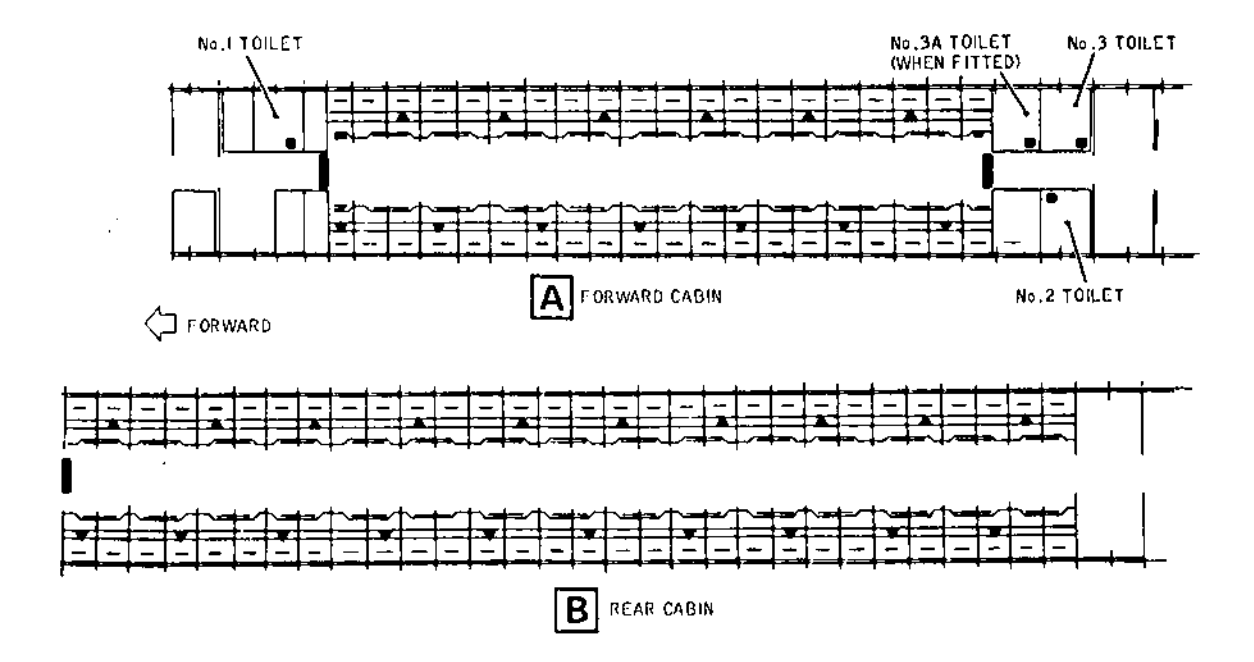
Two warning lamps, engraved respectively NO SMOKING and FASTEN SEAT BELTS, are mounted on each steward's control panel.

R 3. 'Return to Seat' Signs

R The 'return to seat' sign assembly in each toilet is recessed into the panelling of the inboard toilet console. A translucent sign panel is retained by the lipped edges of the removable sides of the assembly,

CMB 33 25 00 0 AAM0 CB12752/00B





R

Passenger Signs
Figure 001

each of which is secured by two screws.

4. 'Toilets Occupied' Signs

R A 'toilets occupied' sign is fitted in each 'exit' sign
R assembly mounted in the roof of the forward end of each
R cabin and at the rear end of the forward cabin. A
R translucent sign panel, which includes the 'exit' sign,
R is located in each assembly by a groove along the lower
R edge and secured by pressing the upper edge into an associated
R retaining strip.

R An additional 'toilet occupied' ancillary sign, comprising
R four 28 V, non-replacement filaments, enclosed in a plastic
R body, is located in the forward cabin in the forward curtain
R lintel.

A 'toilet occupied' caption is mounted on the flight compartment oxygen panel for the benefit of flight compartment crew members.

5. Operation (Ref. Fig. 002)

A. Control and Indication

The 'no smoking' and 'fasten seat belts' signs are supplied from the 'A' essential 28 V d.c. busbar and controlled by two toggle switches on the flight compartment roof panel engraved NO SMKG and FASTEN SEAT BELTS respectively. Two warnings lamps, one engraved NO SMOKING, and the other FASTEN SEAT BELTS, are mounted on each stewards' control panel and light when the associated signs in the cabin are illuminated. A low tone warning signal, initiated by the operation of the NO SMKG and the FASTEN SEAT BELTS switches, is audible through the public address system.

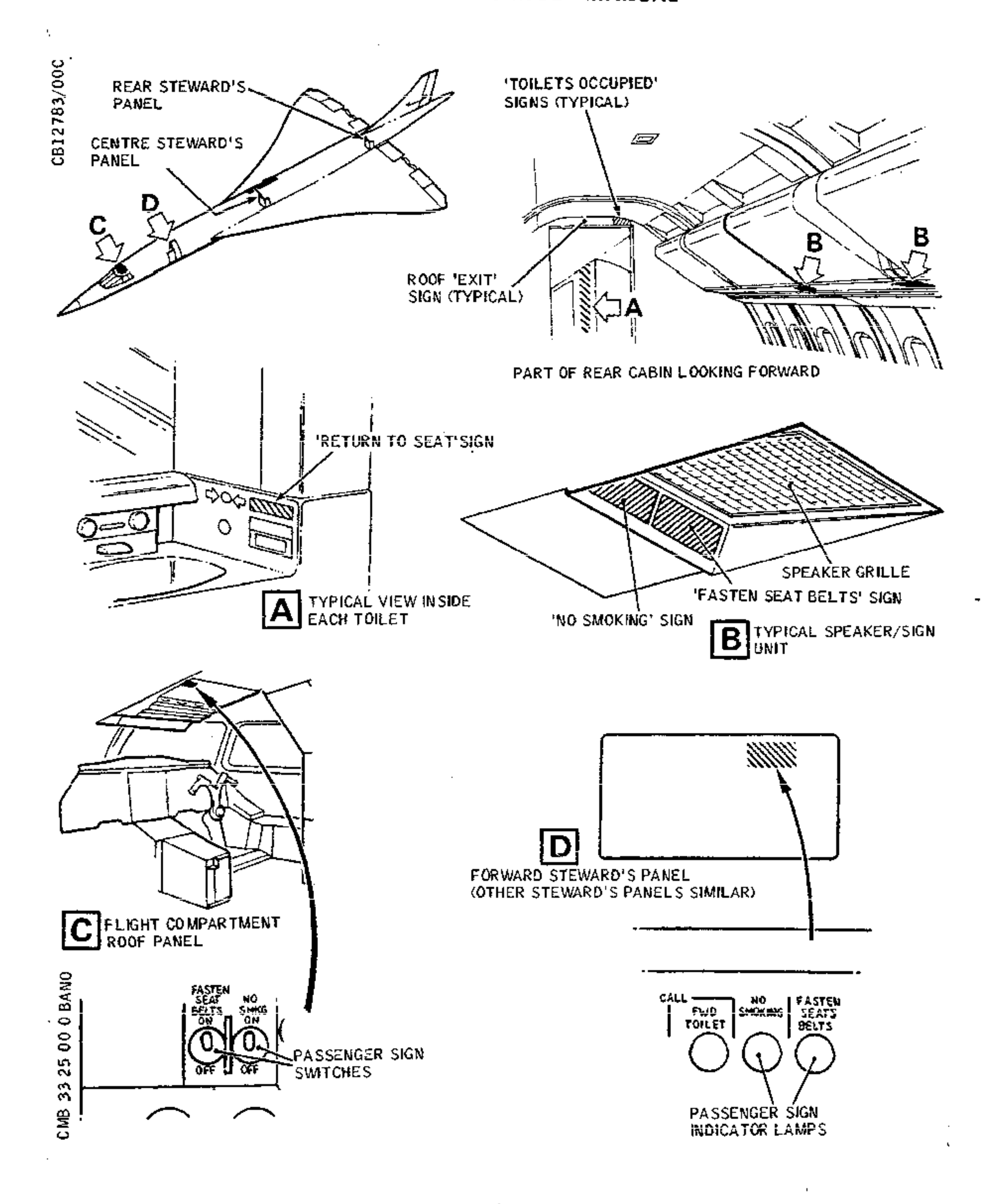
The 'toilets occupied' signs are supplied from 'B' essential 28 V d.c. busbar and controlled by one pole of a double-pole door microswitch. The other pole is associated with toilet lighting (Ref. 33-22-00).

B. Functional Description (Ref. Fig. 003)

When ON is selected at the NO SMKG switch -

(1) the NO SMOKING warning lamp on each stewards' panel is lit,

(2) the 'no smoking' signs are illuminated,



Passenger Signs - Controls,
Indicators and Equipment
Figure 002

R

(3) a low tone warning signal is relayed through the aircraft public address system and

(4) filament lamps associated with emergency lighting are lit (Ref. 33-51-00).

When OFF is selected the low tone warning signal is again relayed through the public address system and all 'no smoking' signs and associated warning lights go out, together with those lights associated with emergency lighting.

When ON is selected at the FASTEN SEAT BELTS switch -

(1) the FASTEN SEAT BELTS warning lamp on each stewards' panel is lit,

(2) the 'fasten seat belts' signs are illuminated,

(3) a low tone warning signal is relayed through the aircraft public address system and

R (4) the 'return to seat' sign in each toilet is illuminated.

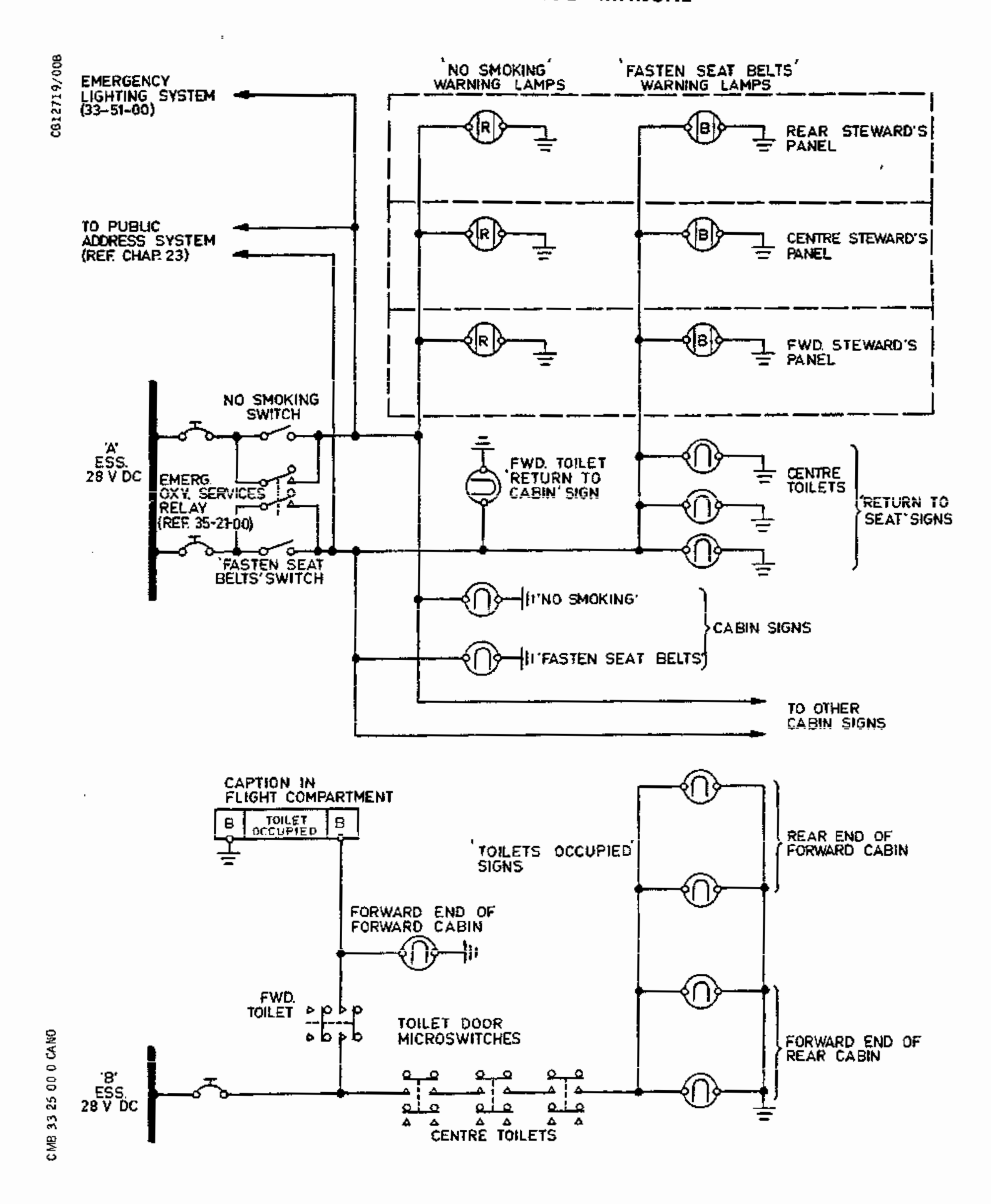
When OFF is selected the low tone warning signal is again relayed through the public address system, and
R all 'fasten seat belts' and 'return to seat' signs and associated warning lights go out.

The 'toilets occupied' sign at the forward vestibule, the 'toilet occupied' sign on the forward lintel and the TOILET OCCUPIED caption in the flight compartment are illuminated when the forward toilet door is closed and bolted.

The 'toilets occupied' signs at the rear end of the forward cabin and the forward end of the rear cabin are illuminated when all centre toilet doors are closed and bolted.

If the cabin oxygen supply rises to emergency pressure the emergency oxygen services relay (Ref. 35-21-00) is energized and connects a supply to operate the audible warning and to light the 'no smoking' and 'fasten seat belts' warning signs, thereby overriding the NO SMKG and FASTEN SEAT BELTS control switches.

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R - Passenger Signs - Simplified Schematic
Figure 003

PASSENGER SIGNS - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

C. Renew any faulty filaments in indicators or warning signs.

Trouble Shooting

```
*******************************************
*Prepare to trouble shoot (Ref. para.2.)  *
*Select "ON" at the NO SMKG control switch *
*on the pilots' roof panel and check that -*
*(1) a low tone warning sounds throughout  *
*    the PA system,                        *
*(2) the NO SMOKING indicator on each      *
*    steward's panel is lit and            *
*(3) all 'no smoking' signs in the         *
*    forward and rear cabins are lit.      *
*(4) the lamps associated with emergency   *
*    lighting are lit.  IF -               *
*******************************************
*******************************************
          |    |
          |    |            ----------------------------------
          |    |           |1. A low tone warning does not    |
          OK   NOT OK------|   sound - Ref. 23-31-00.         |
          |                |2. Any one NO SMOKING indicator or|
          |                |   sign not lit - check for 28 V  |
          |                |   d.c. input at lamp and renew   |
          |                |   lamp or check wiring as        |
          |                |   necessary.                     |
          |                |3. All NO SMOKING indicators fail |
          |                |   to light - Chart 101.          |
          |                |4. Lamps associated with emergency|
          |                |   lighting not lit - Ref. 33-51-00|
          |                 ----------------------------------
          |
*******************************************
*Select "ON" at the FASTEN SEAT BELTS      *
*control switch and check that -           *
*(1) a low tone warning sounds throughout  *
*    the PA system,                        *
*(2) the FASTEN SEAT BELTS indicator on    *
*    each steward's panel is lit and       *
*(3) all 'fasten seat belts' signs in the  *
*    forward and rear cabins and the       *
*    'return to seat' sign in each toilet  *
*    are lit.  IF -                        *
*******************************************
          |    |
```

```
       |      |
       |      |             -------------------------------------
       |      |            |1. A low tone  warning does not      |
       OK    NOT OK------|   sound - Ref. 23-31-00.             |
       |                   |2. Any one FASTEN SEAT BELTS indi-   |
       |                   |   cator or sign or 'return to       |
       |                   |   seat' sign not lit - check for    |
       |                   |   28 V d.c. input at lamp and       |
       |                   |   renew lamp or check wiring as     |
       |                   |   necessary.                        |
       |                   |3. ALL FASTEN SEAT BELTS signs and   |
       |                   |   indicators and 'return to seat'   |
       |                   |   signs fail to light - Chart 102.  |
       |                    -------------------------------------
       |
C.*********************************************
  *Close and bolt all toilet doors and check *
  *that all 'toilet engaged' signs light and *
  *that -                                    *
  *(1) when the forward toilet door is open  *
  *    the associated signs in the forward   *
  *    cabin go out and                      *
  *(2) when any one of the centre toilet     *
  *    doors is open the associated signs in *
  *    the forward and aft cabins go out.    *
  *    IF -                                  *
  *******************************************
                  |
```


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NOT OK

1. All 'toilet engaged' signs fail to light. Check for 28 V d.c. output from CB (3) and renew CB (3) or check wiring as necessary.
2. Sign associated with forward toilet does not light. Check for 28 V d.c. input at Sign (15). Renew Sign (15) or Microswitch (11) as necessary.
3. Sign associated with forward toilet does not go out when door is unbolted. Renew Microswitch (11).
4. One sign associated with centre toilets does not light. Check for 28 V d.c. input at Sign (16) or (17) and renew Sign (16) or (17) or check wiring as necessary.
5. All signs associated with centre toilets fail to light - Chart 103.
6. Both signs associated with centre toilets light when only one centre toilet door is bolted. Renew microswitch in other toilet.

```
********************************
*'NO SMOKING' INDICATORS FAIL *
*TO LIGHT WHEN SWITCHED ON.    *
********************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

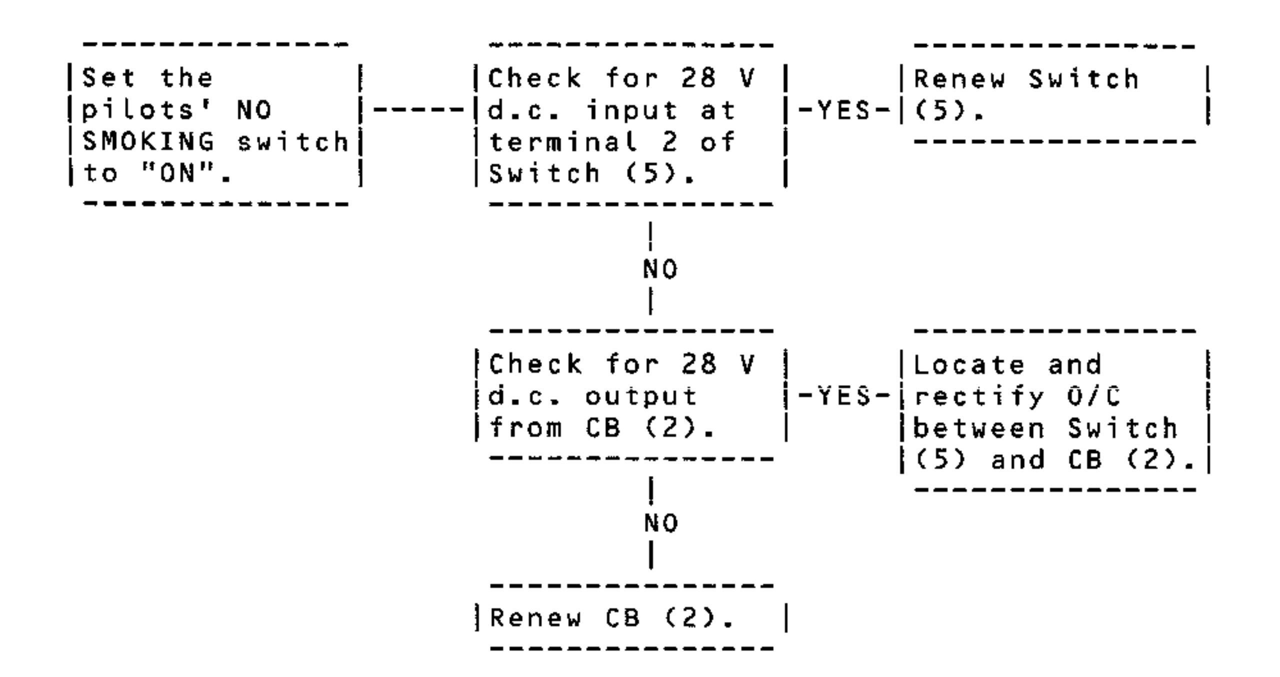


Chart 101

ALL 'FASTEN SEAT BELTS' SIGNS AND INDICATORS AND 'RETURN TO SEAT' SIGNS FAIL TO LIGHT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

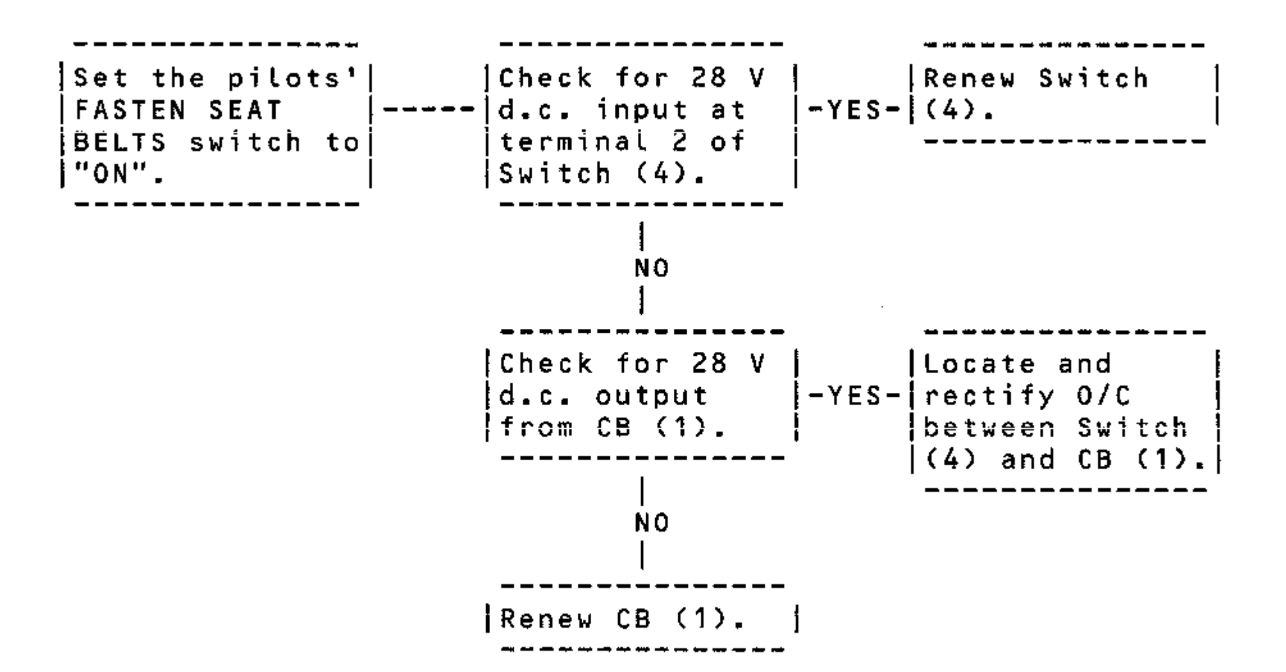


Chart 102

```
*******************************
*ALL ASSOCIATED SIGNS FAIL TO *
*LIGHT WHEN CENTRE TOILET     *
*DOORS ARE CLOSED AND BOLTED. *
*******************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

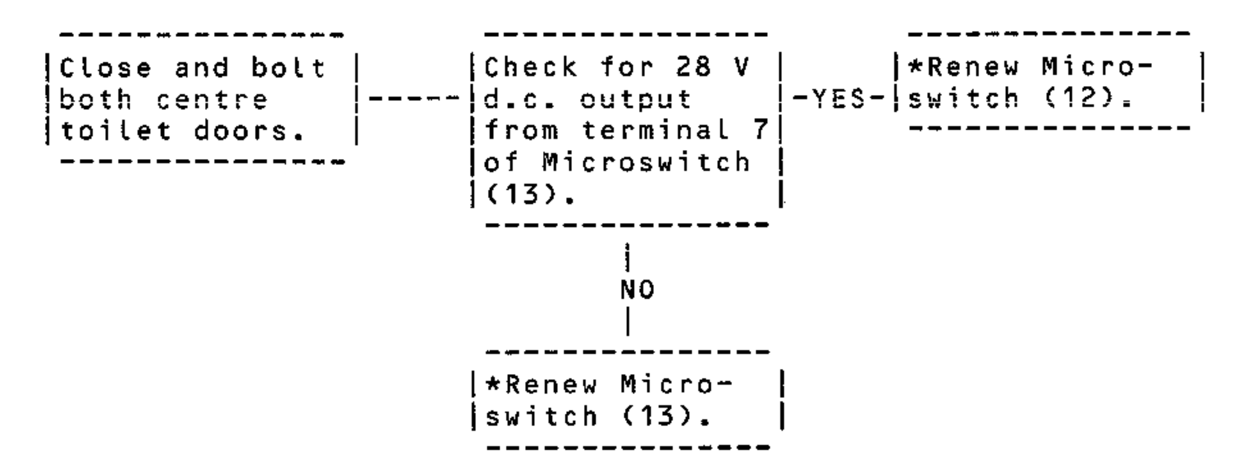


Chart 103

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit breaker 28 V	-	1-213	W191	Map ref. L8	24-50-00 R/I	
(2) Circuit breaker 28 V	-	1-213	W192	Map ref. L9	24-50-00 R/I	
(3) Circuit breaker 28 V	-	5-213	M201	Map ref. C19	24-50-00 R/I	
(4) 'Fasten seat belts' switch	-	4-211	W193	Pilots' roof panel	33-25-00 R/I	
(5) 'No smoking' switch	-	4-211	W194	Pilots' roof panel	33-25-00 R/I	
(6) 'Fasten seat belts' indicator lamps	-	1-221 1-223 1-241	W233 W229 W231	Fwd., Centre and Rear steward's panels	33-25-00 R/I	
(7) 'No smoking' indicator lamps	-	1-221 1-223 1-241	W234 W230 W232	Fwd., Centre and Rear steward's panels	33-25-00 R/I	
(8) 'Return to seat' signs	-	222 223 224	L981 L983 L984	No.1, No.2, No.3 and (when fitted) No.3a toilets	33-25-00 R/I	
(9) Cabin 'fasten seat belts' sign	-	Various		Loud-speaker panels	33-25-00 R/I	
(10) Cabin 'no smoking' signs	-	Various		Loud-speaker panels	33-25-00 R/I	
(11) No.1	-	222	-	Door	33-25-00	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
toilet door microswitch				lintel	R/I	
(12) No.2 toilet door microswitch	-	223	-	Door lintel	33-25-00 R/I	
(13) No.3 toilet door microswitch	-	224	-	Door lintel	33-25-00 R/I	
(14) No.3a toilet (when fitted) microswitch	-	224	-	Door lintel	33-25-00 R/I	
(15) Fwd. 'toilet engaged' sign	-	221	L852	Fwd. end, fwd. cabin	33-25-00 R/I	
(16) Centre 'toilets engaged' sign	-	223	L854	Rear end, fwd. cabin	33-25-00 R/I	
(17) Centre 'toilets engaged' sign	-	223	L881	Fwd. end, rear cabin	33-25-00 R/I	
(18) 'Toilet occupied' sign	-	20-215	M202	Flight compt., oxygen panel	33-25-00 R/I	
(19) Fwd. 'toilet occupied' ancillary sign	-	222	M204	Fwd. end, fwd. cabin	33-25-00 R/I	

Component Identification
Table 101

PASSENGER SIGNS - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

R This topic contains instructions for the renewal of filaments in the 'no smoking' and 'fasten seat belts' signs mounted in the loudspeaker panels (Ref. 23-31-00) above the passenger seats, and in the 'return to seat' sign in each toilet, and for the removal and installation of 'toilet occupied' ancillary signs mounted in the curtain lintels in the forward cabin. The filaments in the 'toilet occupied' sign in the curtain lintel are not replaceable.

The 'toilets occupied' signs mounted in the roof at the end of each cabin and at the rear end of the forward cabin form part of the exit direction signs. Instructions for the renewal of filaments and for the removal and installation of the sign are contained in Emergency Lighting (Ref. 33-51-00).

Instructions for the removal and installation of the NO SMKG and FASTEN SEAT BELTS light control switches, mounted on the pilots' roof panel, are contained in 33-00-00, and for the NO SMOKING and FASTEN SEAT BELTS warning lamps, mounted on each steward's panel, in 33-20-00.

2. 'No Smoking' and 'Fasten Seat Belts' Filament Renewal

A. Prepare

(1) Ensure that the NO SMKG and FASTEN SEAT BELTS light control switches on the flight compartment roof panel are at OFF.

B. Renew Filament

(1) Using the lip on the bottom edge of the sign panel, lift the panel to swing the mounting backward on its pivots.

(2) Renew the filament.

(3) Close the sign panel.

C. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Set the NO SMKG switch or the FASTEN SEAT BELTS switch, as appropriate, to "ON" and check that the filament is lit. Return the switch to "OFF".

(3) Switch off and disconnect electrical ground power as detailed in 24-41-00.

R 3. 'Return to Seat' Filament Renewal

A. Prepare

(1) Ensure that the FASTEN SEAT BELTS light control switch on the flight compartment roof panel is at OFF.

(2) Open the toilet inboard console door.

B. Renew Filament

(1) Remove the screws securing the cover to the top of the wash basin top assembly and remove the cover to gain access to the back of the sign.

(2) Remove the screws and washers securing the cover plate to the top of the sign assembly and remove the cover plate.

(3) Renew the filament.

(4) Secure the cover plate to the top of the sign assembly with the screws and washers.

(5) Secure the cover to the wash basin top assembly with the screws.

(6) Close the console door.

C. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Set the FASTEN SEAT BELTS light control switch to
R "ON" and check that the 'return to seat' sign filament is lit. Return the switch to "OFF".

(3) Switch off and disconnect electrical ground power as detailed in 24-41-00.

4. 'Toilet Occupied' Ancillary Sign

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Trip the TOILET ENGAGED SIGN SUP circuit breaker M201, on panel 5-213, map ref.C19, and fit a safety clip.

(2) Remove the bolts and washers securing the curtain rail to the bottom side of the curtain lintel, and remove the curtain rail to gain access to the body of the 'toilet occupied' sign.

C. Remove

(1) Label the sign electrical flying leads to assist installation.

(2) Using a suitable tool, disconnect the flying leads from the terminal block on the adjacent bulkhead.

(3) Remove the nuts securing the sign retention bracket to the studs inside the lintel. Support the sign, remove the bracket and withdraw the sign from its housing.

D. Install

(1) Comply with the electrical safety precautions.

(2) Orientate the sign and fit it in the housing, from inside the curtain lintel. Refit the retention bracket to the studs, ensuring that the rubber face of the bracket correctly supports the rear of the sign body. Secure the bracket with the nuts.

(3) Route the electrical flying leads through the cable clips in the lintel to the terminal block on the adjacent bulkhead.

(4) Using a suitable tool, connect the electrical cables to the terminal block, ensuring that the connections are made in accordance with the cable

R identifications and the applicable wiring diagram.

R E. Conclusion

R (1) Reset the circuit breaker tripped before removal.

R (2) Close and lock the associated toilet door(s) and
R check that the sign is evenly illuminated.

R (3) Refit the curtain rail to the bottom side of the
R lintel and secure it with the bolts and washers.

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PASSENGER SIGNS - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains an Operational Test which details the procedure to prove the correct operation of the
R passenger signs and associated indicator lamps. A specific
R self-contained test, comprising a check to prove that the
R 'no smoking' signs are automatically lit when the emergency
R oxygen services relay is activated, is also included in this
R topic, but as the relay is a part of the Oxygen System
R (Ref. Chap.35) the procedures for carrying out the check
R are detailed in 35-21-00, Adjustment/Test. Functional
and System Tests are not considered necessary in this application.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test

(1) Select "ON" at the NO SMKG control switch on the flight compartment roof panel 4-211 and check that -

(a) a low tone warning is relayed through the public address system (Ref. 23-31-00),

(b) the NO SMOKING indicator lamp on each steward's panel is lit,

(c) all the 'no smoking' signs in the forward and rear cabins are illuminated and

(d) lamps associated with emergency lighting are lit (Ref. 33-51-00).

(2) Select "OFF" at the NO SMKG control switch and check that -

(a) the low tone warning is again relayed through the public address system (Ref. 23-31-00) and

(b) all indicator lights, emergency lights and the

lights in the 'no smoking' signs are extinguished.

(3) Select "ON" at the FASTEN SEAT BELTS control switch and check that -

(a) a low tone warning is relayed through the public address system (Ref. 23-31-00),

(b) the FASTEN SEAT BELTS indicator lamp on each steward's panel is lit,

(c) all 'fasten seat belts' signs in the forward and rear cabins are illuminated and

R (d) the 'return to seat' sign in each toilet is illuminated.

(4) Select "OFF" at the FASTEN SEAT BELTS switch and check that -

(a) the low tone warning signal is again relayed through the public address system (Ref. 23-31-00) and

(b) all indicator lights and the lights in all
R the 'fasten seat belts' and 'return to seat' signs are extinguished.

(5) Close and bolt both centre right toilet doors and check that the lights in the 'toilets occupied' signs at the rear end of the forward cabin and the forward end of the rear cabin are extinguished.

(6) Close and bolt the centre left toilet door and check that the 'toilets occupied' signs are lit.

(7) Unbolt and open one of the two centre right toilet doors and check that the lights in the 'toilets occupied' signs are extinguished.

(8) Unbolt and open all centre toilet doors.

(9) Close and bolt the forward toilet door and check that the 'toilets occupied' signs at the forward end of the forward cabin are lit, and that the TOILET OCCUPIED caption on the flight compartment oxygen panel (panel 20-215) is illuminated.

(10) Unbolt and open the forward toilet door and check

that the lights in the 'toilets occupied' signs are extinguished and that the TOILET OCCUPIED caption is not illuminated.

R (11) Carry out an Operational Test of the Passenger System (Ref. 35-21-00) and check that the passenger signs and the emergency lights (Ref. 33-51-00) are activated as detailed in paragraphs (1)(a) to (d), and (3)(a) to (d), above, when the emergency oxygen services relay is energized.

R C. Conclusion

R (1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

R 3. 'No Smoking' Signs - Test of Operation in Conjunction with Oxygen System

R A. Test

R (1) Carry out the 'No Smoking' Signs Test as detailed in 35-21-00, in Adjustment/Test, and check that the 'no smoking' signs are automatically illuminated when the oxygen system is activated.

CALL SYSTEMS - DESCRIPTION AND OPERATION

1. General

The aircraft call systems comprise two-way call facilities between the flight compartment and each steward's position, and between any one steward's position and the other two; and one-way call facilities which enable a passenger to summon a steward to any cabin seat or toilet.

Visible indication of all calls is given by lights, and audible indication by a tone signal through the public address system (Ref. 23-31-00), in the vestibule areas. Audible indication of a steward-to-flight compartment call is given by a pilot call audible indicator in the flight compartment (Ref. 23-42-00).

The toilet and flight compartment call indicator lamps on the stewards' control panels operate in conjunction with associated relays, and remain lit after the appropriate call push-switch has been released, until an associated reset switch is pressed.

R B NOTE: Post CM42018 HI chime from PA system deleted.

2. Operation

All call systems are supplied from the 'B' main 28 V d.c. busbar.

A. Control and Indication (Ref. Fig.001 and 002)

(1) Flight Compartment-to-Steward Call

A STEWARD CALL indicator lamp/switch on the flight compartment roof panel is a double-pole press-to-make spring-return switch fitted with a translucent knob illuminated by an internal filament.

A FLIGHT DECK CALL indicator lamp/switch and a CANCEL switch are mounted on the forward steward's call panel and on each of the centre and rear steward's control panels. The FLIGHT DECK CALL indicator lamp/switch is a single-pole press-to-make spring-return switch fitted with a translucent knob illuminated by an internal filament. The switch is guarded to protect against accidental operation of the FLIGHT DECK CALL button. The CANCEL switch is a press-to-break single-pole spring-return switch

with a knob which is not illuminated.

A hold-on relay that operates in conjunction with the flight compartment-to-steward call system is mounted in the forward steward's control panel.

(2) Cabin Crew Call

A CABIN CREW CALL switch used in a steward-to-steward call system is mounted on the forward steward's control panel and on the centre and rear steward's control panels.
RB Following Mod.33D103 the call switch is a 3 pole
RB press-to-make spring-return switch.
RB Selection of either up or down position of the switch
RB at any stewards station allows selective signalling of
RB one of the other two stations. The station being
RB called is indicated by illumination of the cabin
RB ceiling light indicator(s) nearest the called station.
RB A two tone chime is also activated through the public
RB address system but only emanates from the three
RB vestibule areas.

(3) Passenger Cabin-to-Steward Call

A call switch, mounted on a passenger service unit (PSU) above each row of seats, is a press-to-make plus momentary contact, press-to-break switch fitted with a translucent knob illuminated by an internal filament.

A FWD CABIN CALL indicator lamp is mounted on the forward and the centre steward's control panels. A REAR CABIN CALL indicator lamp is mounted on the centre and rear steward's control panels.

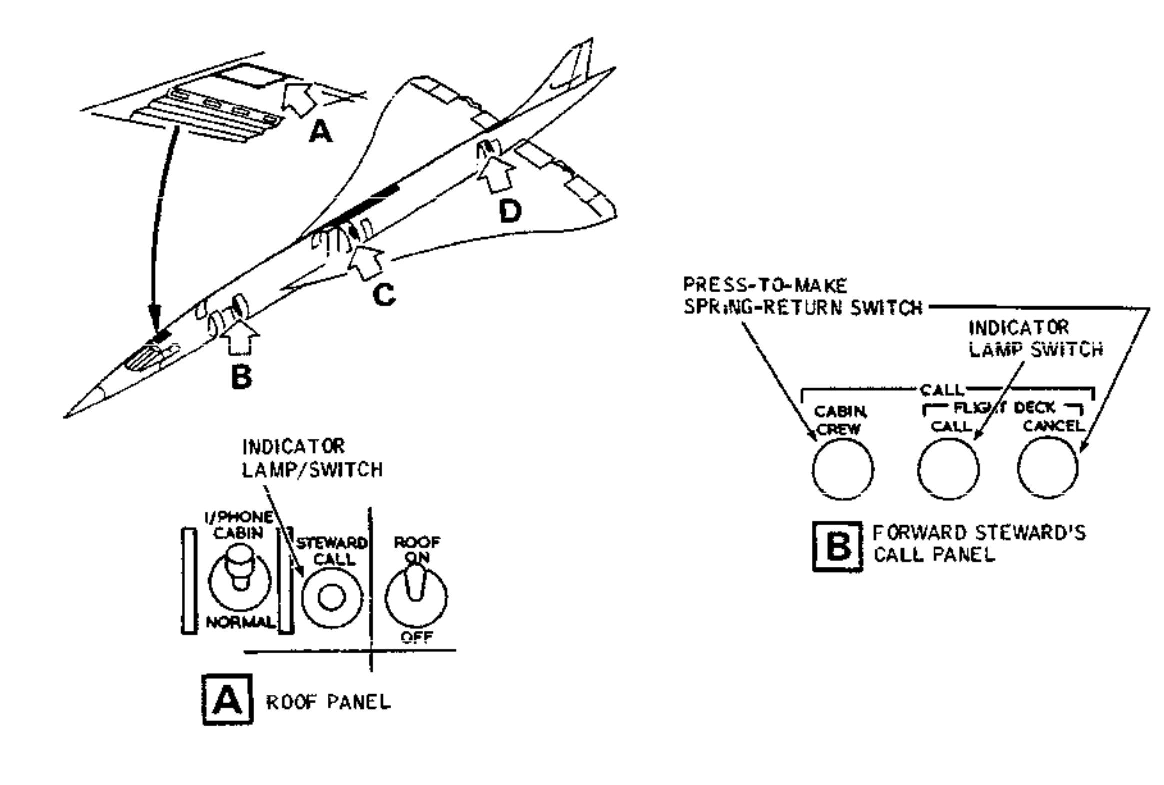
Four cabin call ceiling indicator lamps are fitted, two in the forward cabin aisle and two in the rear cabin aisle.

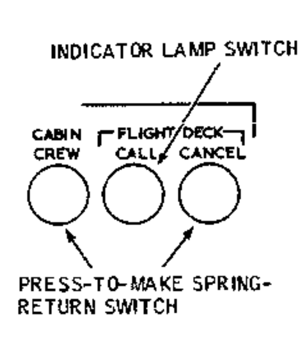
After SB 33-015 For A/C 001-001,

Four cabin call ceiling indicator lamps, each under a blue domed lens, are fitted, two in the forward cabin aisle and two in the rear cabin aisle.

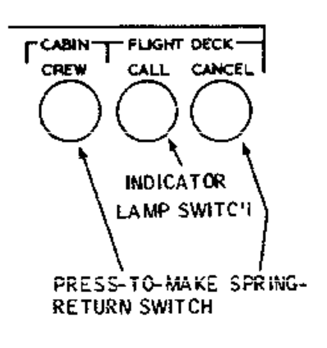
(4) Toilet-to-Steward Call

A steward call indicator lamp/switch mounted on the console unit in each toilet is a double





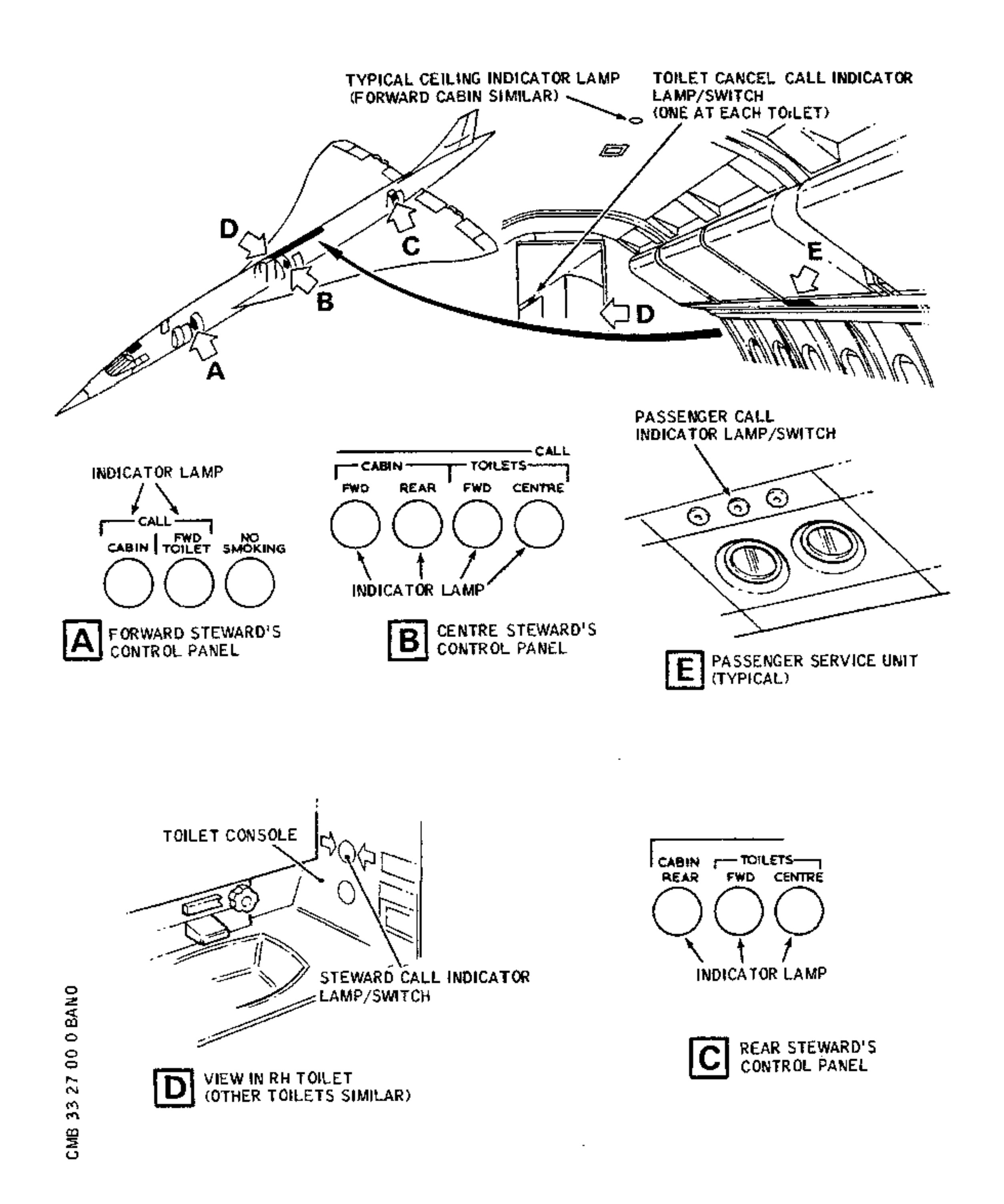






CMB 33 27 00 0 AANO

- Call Systems - Flight Compartment/Cabin Crew
Figure 001



\- Call Systems - Passenger/Cabin Crew
Figure 002

pole press-to-make spring-return switch fitted with a translucent cover illuminated by an internal filament.

A toilet indicator/cancel call lamp/switch is mounted outside each toilet above the toilet door. Each indicator lamp/switch is a single-pole press-to-break spring-return switch fitted with a translucent knob illuminated by an internal filament.

A FWD TOILET and a CENTRE TOILET call indicator lamp are mounted on each of the forward, centre and rear steward's control panels. The ceiling indicator lamps are those used in the passenger cabin-to-steward call.

A hold-on relay that operates in conjunction with the forward toilet call system is mounted in the forward steward's control panel, and three relays associated with the centre toilets call system are mounted in the centre steward's control panel.

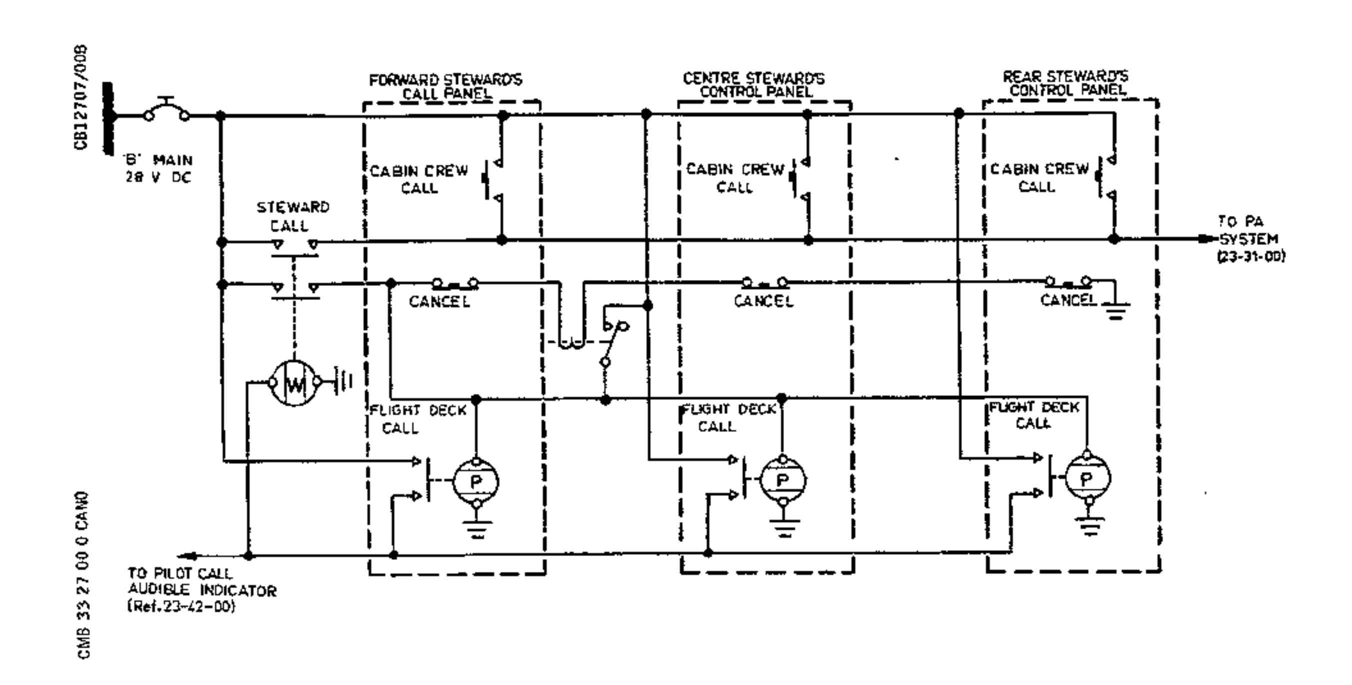
B. Functional Description

(1) Flight Compartment-to-Steward Call (Ref. Fig. 003)

With the aircraft 28 V d.c. supply available, when the STEWARD CALL switched is pressed, one set of contacts connects the supply to the public address (PA) system to operate the tone generator. The other set of contacts connects the supply to light the filaments in the FLIGHT DECK CALL indicator lamp/switch at each steward's panel and to energize the hold-on relay through the normally closed contact of the CANCEL switch on each steward's panel.

With the relay energized, the relay contacts complete the hold-on circuit to the relay coil, which maintains the contacts in the closed position and the FLIGHT DECK CALL lamps at steward's panels lit.

When the STEWARD CALL switch is released the supply to the PA system is interrupted, but the FLIGHT DECK CALL lamps at each steward's position remain lit until the CANCEL switch at any one of the steward's panels is pressed and interrupts the supply to the hold-on relay.

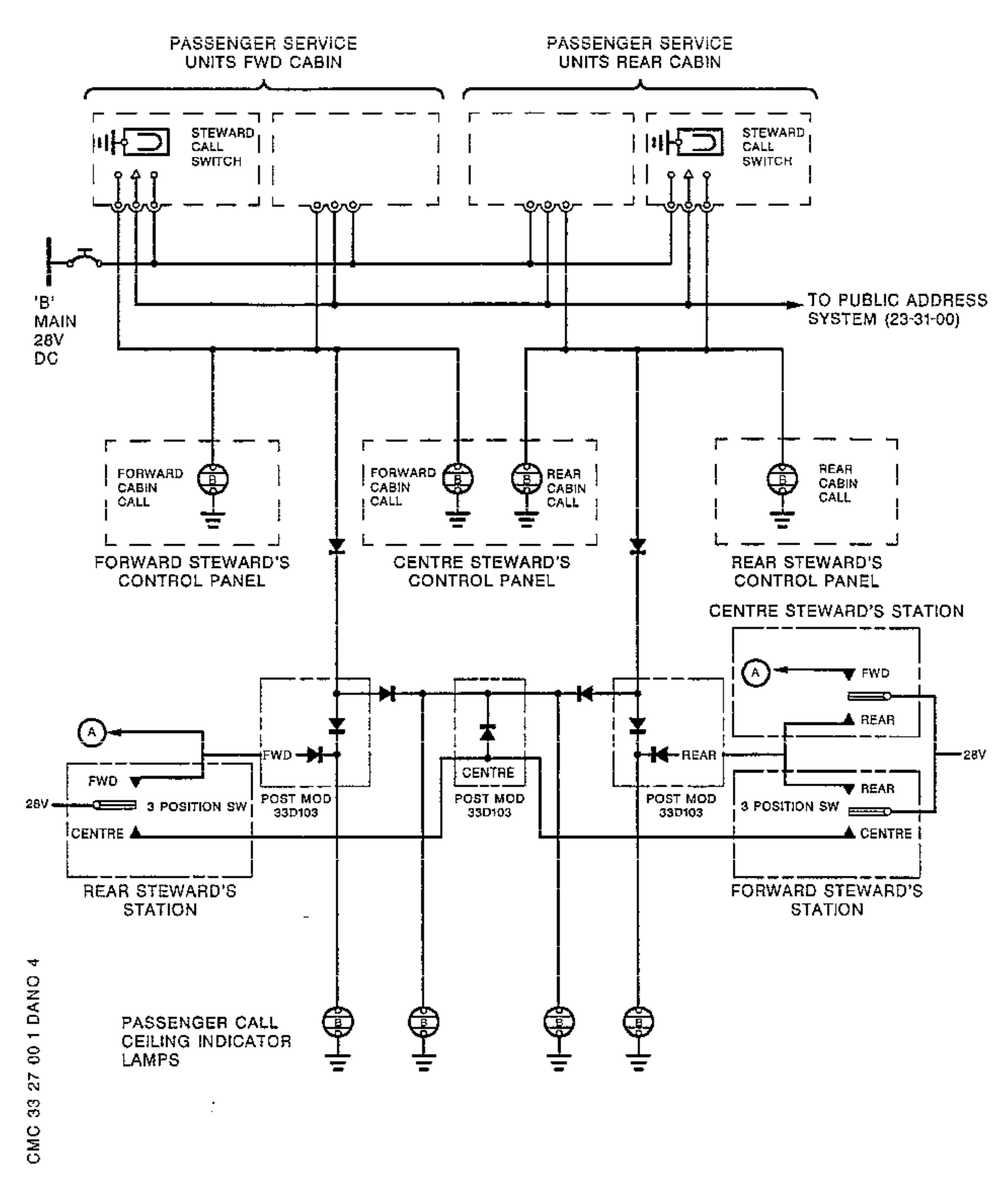


\- Flight Compartment-to-Steward Call -
Simplified Schematic
Figure 003

When the FLIGHT DECK CALL indicator lamp/switch at any one of the steward's panels is pressed, the normally open contact of the switch closes and connects a supply to light the STEWARD CALL indicator lamp on the flight compartment roof panel and to operate the pilot call audible indicator (Ref. 23-42-00). When the switch is released the supply is interrupted, the light is extinguished and the audible indication is terminated.

(2) Cabin Crew Call (Ref. Fig. 003)

When the CABIN CREW CALL switch at any steward's panel is pressed the contacts of the switch connect a supply to operate the PA system tone generator in the vestibule area. When the switch is released the supply to the PA system is interrupted.



RB

Passenger Cabin-to-Steward Call
Simplified Schematic
Figure 004

(3) Passenger Cabin-to-Steward Call (Ref. Fig. 004)

When a call switch at any PSU is pressed the momentary contact connects the supply to operate the PA system tone generator and a second set of contacts connects the supply to light the filament in the call switch knob and:

(a) for calls originating in the forward cabin, to light the FWD CABIN CALL indicator lamp on the forward and centre steward's control panels, and the foremost cabin ceiling indicator lamps, or

(b) for calls originating in the rear cabin, to light the REAR CABIN CALL indicator lamp on the centre and rear steward's control panels, and the rearmost cabin ceiling indicator lamps.
When the call switch is pressed again the supply is interrupted and all the associated indicator lights are extinguished.

(4) Toilet-to-Steward Call (Ref. Fig. 005)

(a) Forward Toilet

When the call switch in the forward toilet (No.1) is pressed, one set of contacts connects the supply to operate the PA system tone generator, and a second set of contacts connects the supply to:

(i) light the call indicator lamp/switch in No.1 toilet,

(ii) light the toilet indicator/cancel call lamp/ switch outside No.1 toilet door,

(iii) energize the associated hold-on relay, and

(iv) light the FWD TOILET call indicator lamp on the forward, centre and rear steward's control panels, and the ceiling indicator lamps in the forward and rear cabins through a contact of the hold-on relay.

(b) Centre Toilets

When a call switch in any centre toilet (No.2, 3 or 3A) is pressed, one set of contacts connects a supply to operate the PA system tone generator, and the other set connects a supply to:

(i) light the call indicator lamp/switch in the associated toilet,

(ii) light the toilet indicator/cancel call lamp/switch outside the associated toilet door,

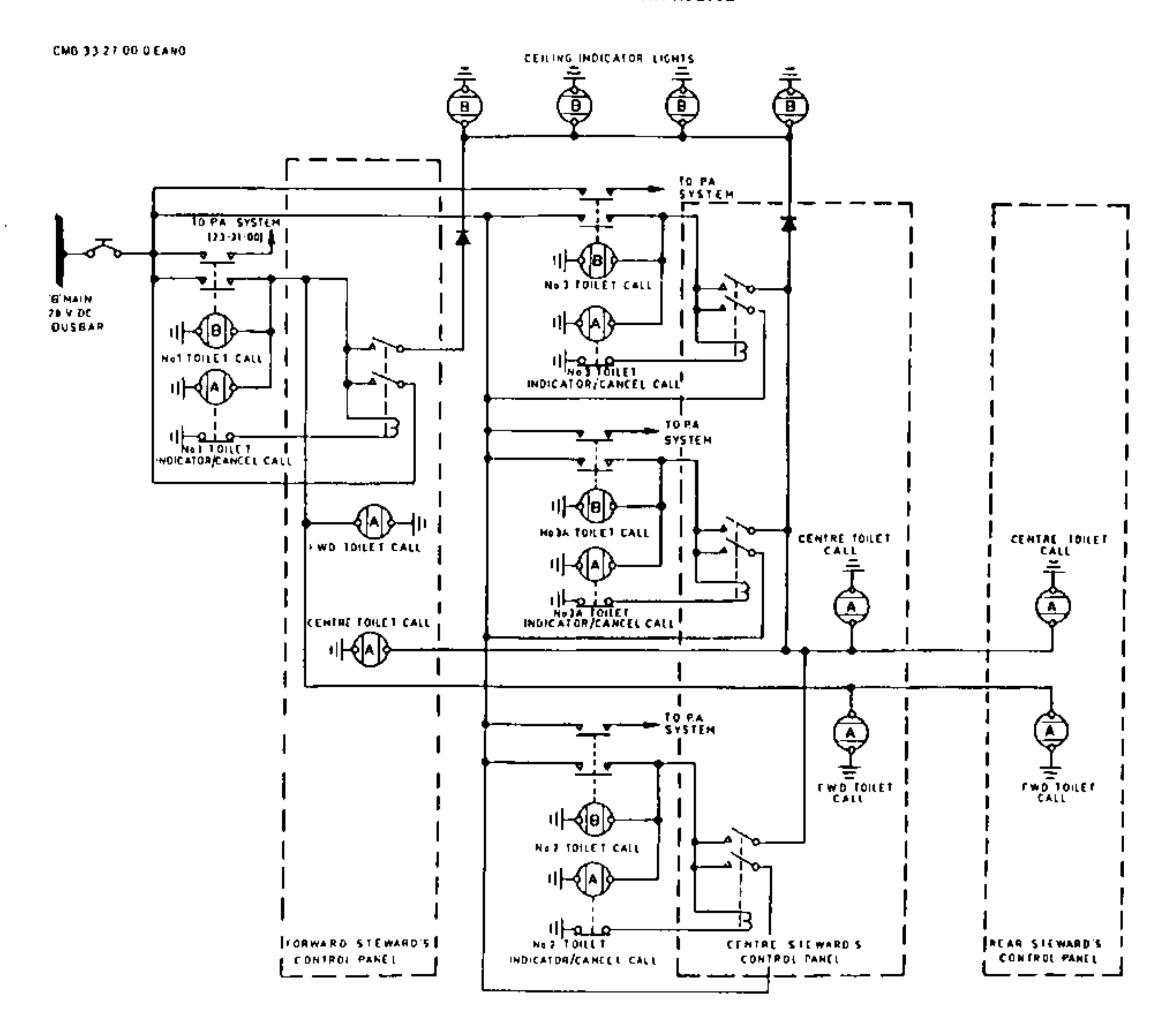
(iii) energize the associated hold-on relay, and

(iv) light the CENTRE TOILET call indicator lamp on the forward, centre and rear steward's control panels, and the ceiling indicator lamps in the forward and rear cabins through a contact of the hold-on relay.

With the relay energized, a relay contact completes the hold-on circuit to the relay coil, through the normally closed contact of the toilet indicator/cancel call lamp/switch, which maintains the relay contacts in the closed position and, therefore, the associated toilet call indicator lamps lit.

When the toilet call switch is released, the supply to the PA system is interrupted, but the associated toilet call indicator lamps remain lit until the toilet indicator/cancel call lamp/switch is pressed and interrupts the hold-on relay supply.

When the appropriate toilet indicator/cancel call lamp/switch is pressed, the supply to the hold-on relay is interrupted, the relay is de-energized and the associated toilet call indicator lights are extinguished.



Toilet-to-Steward Call - Simplified Schematic
Figure 005

EFFECTIVITY: ALL

BA

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R

CALL SYSTEMS - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

R

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

Where call system circuits are similar, procedures and charts are provided which are applicable to each circuit. Where identical components are involved, i.e., one in each circuit, the references to the associated components listed in Table 101 are given, e.g., 'Renew Lamp/Switch (3), (4) or (5)'.

2. Preparation

A. Ensure that the associated circuit-breaker is set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

R

3. Trouble Shooting - Flight Deck to Steward Call

A. *Prepare to trouble shoot (Ref. para.2.).*
Press and release the STEWARD CALL indicator lamp/switch on the pilots' roof panel. Check that a tone signal is audible through the public address system in the vestibule areas, the FLIGHT DECK CALL lamp/switch on each steward's panel is lit. IF -

NOT OK —

1. One FLIGHT DECK CALL Indicator Lamp/Switch (3), (4) or (5) not lit - renew filament.
2. All indicator lamp/switches lit but no tone signal - check public address system (Ref. 23-31-00) output from CB (1). If OK -
3. Indicator lamp switches not lit and no tone signal - check for 28 V d.c. output from CB (1). If OK - renew Switch (2). If not OK - renew CB (1).
4. Indicator lamp/switches lit when Switch (2) depressed but lights go out when Switch (2) released - renew Relay (6). If fault not cleared - check continuity across terminals of Switches (7), (8) and (9).

4. Trouble Shooting - Steward to Flight Deck Call

A.**
Prepare to trouble shoot (Ref. para.2.).
*Press the FLIGHT DECK CALL lamp switch *
*on each steward's panel and check that *
*the STEWARD CALL indicator lamp/switch *
*on the pilots' roof panel is lit whilst *
*the switch is pressed. IF - *
****

NOT OK — 1. Flight deck STEWARD CALL indicator lamp/switch not lit - Chart 101.

5. Trouble Shooting - Crew to Crew Call

A.**
Prepare to trouble shoot (Ref. para.2.).
*Press and release the CABIN CREW CALL *
switch on each steward's panel and check
*for a tone signal through the public *
*address system. IF - *
****

NOT OK — 1. No tone signal - Chart 102.

6. Trouble Shooting - Passenger Cabin to Steward Call (Fwd. Cabin)

A.***
Prepare to trouble shoot (Ref. para.2.).
*Press and release the call switch on *
each passenger service unit (PSU) in the
*forward cabin. Check that the filament *
*in the knob is lit, a tone signal is *
*audible through the public address *
*system, the FWD CABIN CALL Indicator *
*Lamps (13) and (14) on the forward and *
centre steward's panels are lit, and the
*two ceiling Indicator Lamps (35) and *
(36) in the forward cabin aisle are lit.
****

NOT OK —

1. Indicator lamps lit but filament in knob not lit = renew filament.
2. One indicator lamp not lit - renew filament.
3. Indicator lamps lit but no tone signal - disconnect PSU electrical connector, press switch and check for continuity between pin C and pins B and E of fixed connector. If OK - check public address system (Ref. 23-31-00). If not OK - renew call switch.
4. Tone signal audible but no indicator lights - renew call switch.
5. No tone signal and no indicator lights - Chart 103.

7. Trouble Shooting - Passenger Cabin to Steward Call (Rear Cabin)

A. ***
Prepare to trouble shoot (Ref. para.2.).
*Press and release the call switch on *
*each PSU in the rear cabin. Check that *
*the filament in the knob is lit, a tone *
*signal is available through the public *
*address system, the REAR CABIN CALL *
*Indicator Lamps (15) and (16) on the *
centre and rear steward's panels are lit
*and the two Indicator Lamps (37) and *
*(38) in the rear cabin aisles are lit. *
*IF - *
****

NOT OK —

1. Indicator lamps lit but filament in knob not lit - renew filament.
2. One ceiling indicator lamp not lit - renew filament.
3. Indicator lamps lit but no tone signal - disconnect PSU electrical connector, press switch and check for continuity between pin C and pins B and E of fixed connector. If OK - check public address system (Ref. 23-31-00). If not OK - renew call switch.
4. Tone signal audible but no indicator lights - renew call switch.
5. No tone signal and no indicator lights - Chart 103.

8. Trouble Shooting - Toilet to Steward Call

A.**
Prepare to trouble shoot (Ref. para.2.).
Press and release the steward call lamp/
*switch in each toilet. Check that a *
*tone signal is audible through the *
*public address system and that the *
*following lamps are lit: *
* *
*(a) The filament in the call switch. *
(b) The FWD TOILET Indicator Lamps (21),
* (23) and (25) on the fwd., centre *
* and rear steward's panels (forward *
* toilet), or the CENTRE TOILET *
* Indicator Lamps (22), (24) and (26) *
* on the fwd., centre and rear *
* steward's panels (centre toilets). *
*(c) All four Ceiling Indicator Lamps *
* (35), (36), (37) and (38) in the *
* cabin aisles are lit. *
*(d) The Cancel Call Lamp/Switch (27), *
* (28), (29) or (30) outside the *
* associated toilet door. IF - *
****

NOT OK:

1. One indicator lamp or lamp/switch not lit - renew filament.
2. Indicator lamps lit but no tone signal - check for tone signal via other steward call lamp/switches. If OK - renew Switch (17), (18), (19) or (20). If not OK - check public address system (Ref. 23-31-00).
3. Tone signal audible but no indicator lights - Chart 104.
4. No tone signal and no indicator lights - Chart 105.

```
******************************
*FLIGHT DECK 'STEWARD CALL'  *
*INDICATOR LAMP/SWITCH NOT   *
*LIT WHEN STEWARD'S 'FLIGHT  *
*DECK CALL' SWITCH IS        *
*PRESSED.                    *
******************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

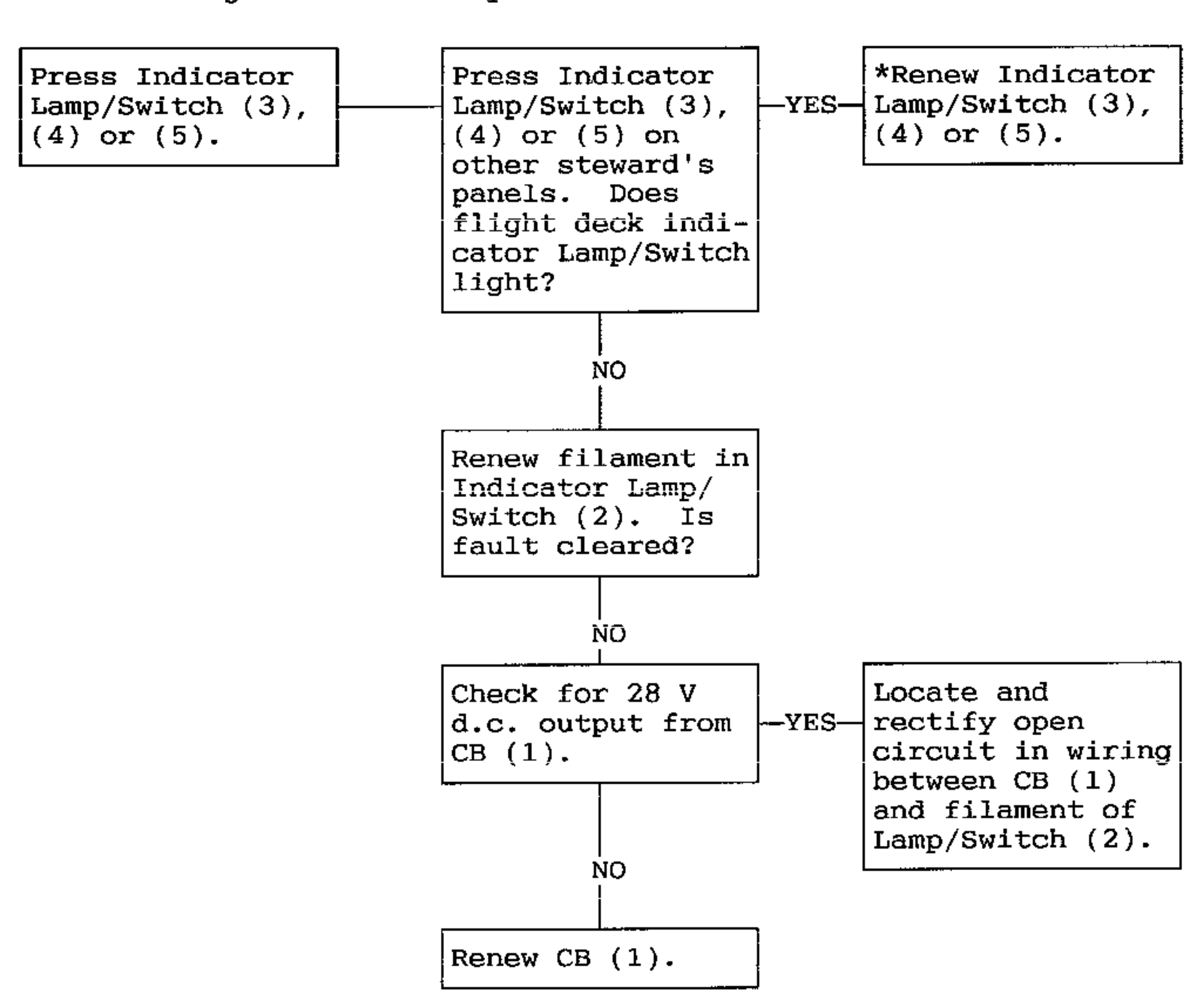


Chart 101

```
******************************
*NO TONE SIGNAL THROUGH      *
*PUBLIC ADDRESS SYSTEM WHEN  *
*'CABIN CREW CALL' SWITCH IS *
*PRESSED.                    *
******************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

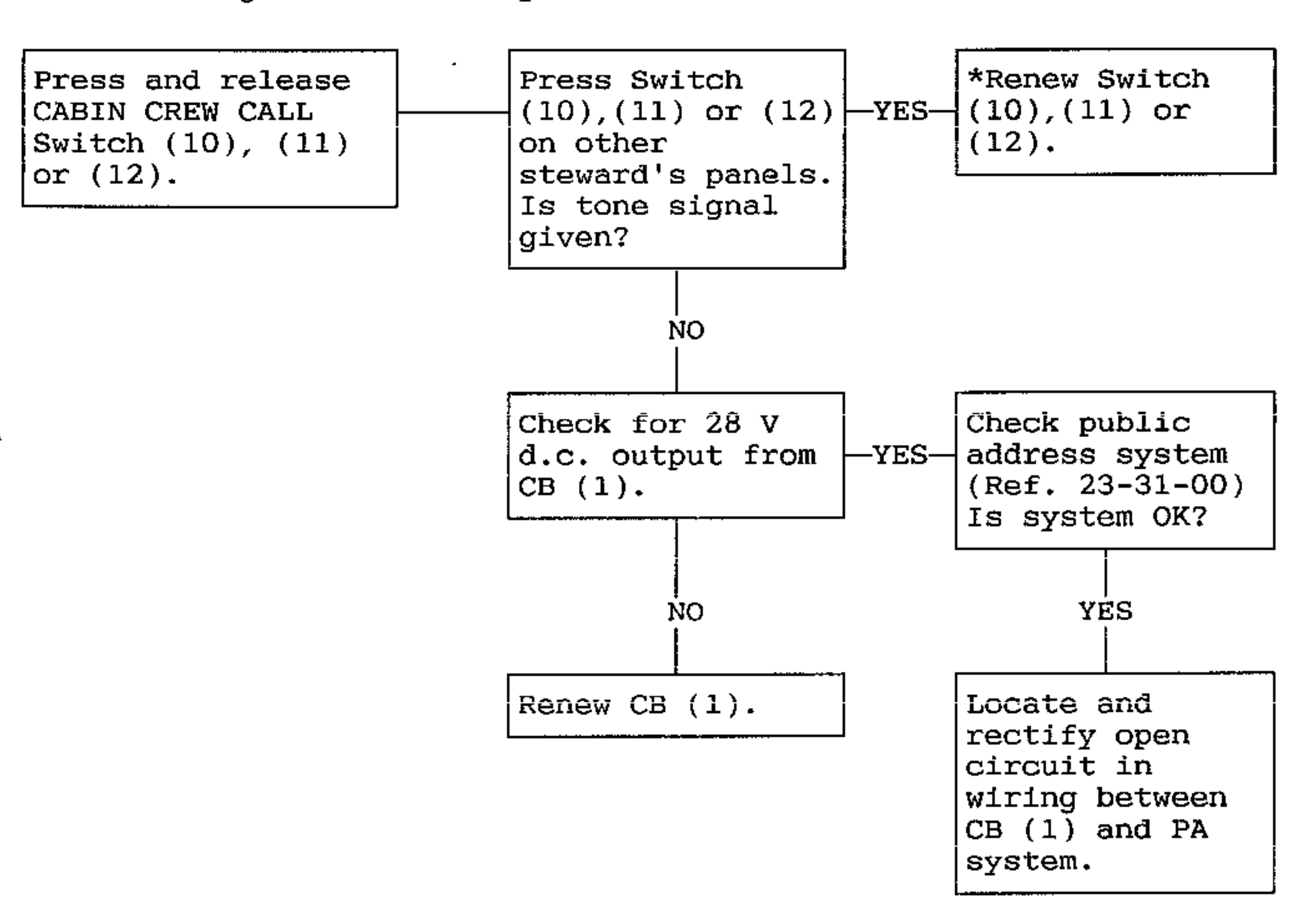


Chart 102

```
******************************
*NO TONE SIGNAL AND NO       *
*INDICATOR LIGHTS WHEN       *
*PASSENGER TO STEWARD CALL   *
*SWITCH PRESSED.             *
******************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

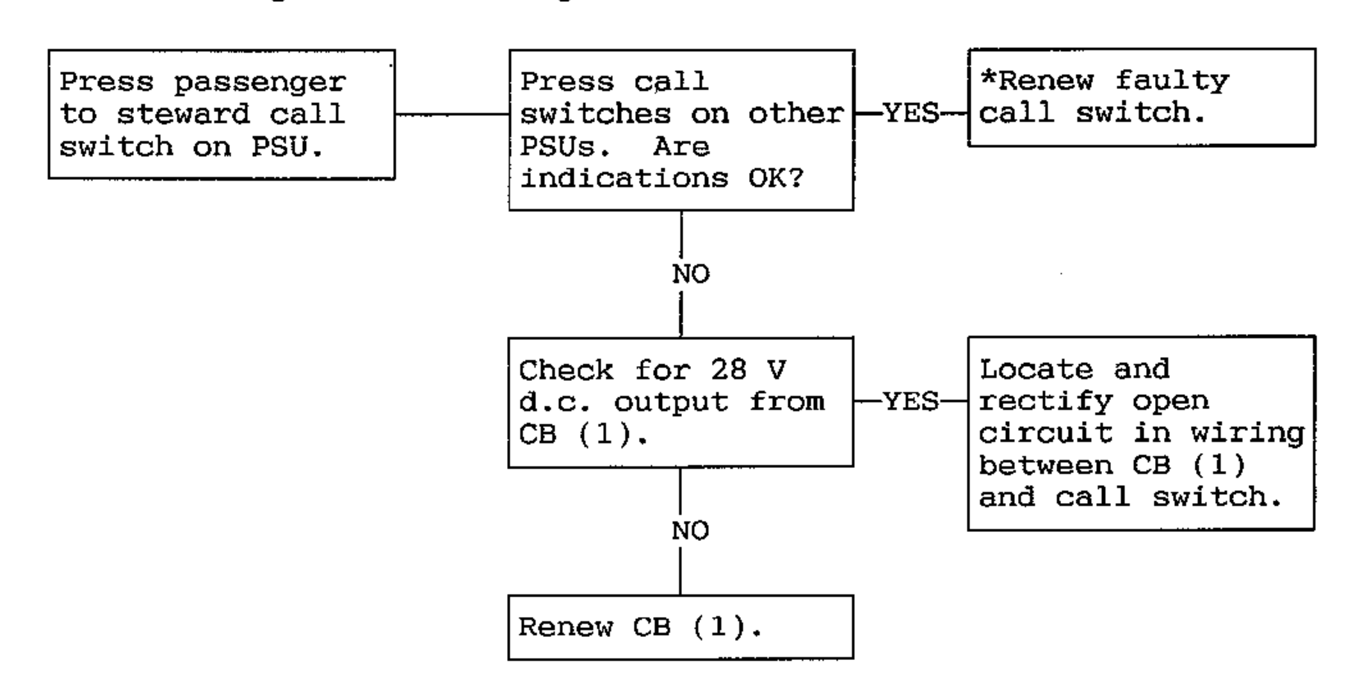


Chart 103

```
*****************************
*TONE SIGNAL AUDIBLE BUT NO *
*TOILET CALL INDICATOR      *
*LIGHTS WHEN STEWARD CALL   *
*LAMP/SWITCH PRESSED AND    *
*RELEASED.                  *
*****************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

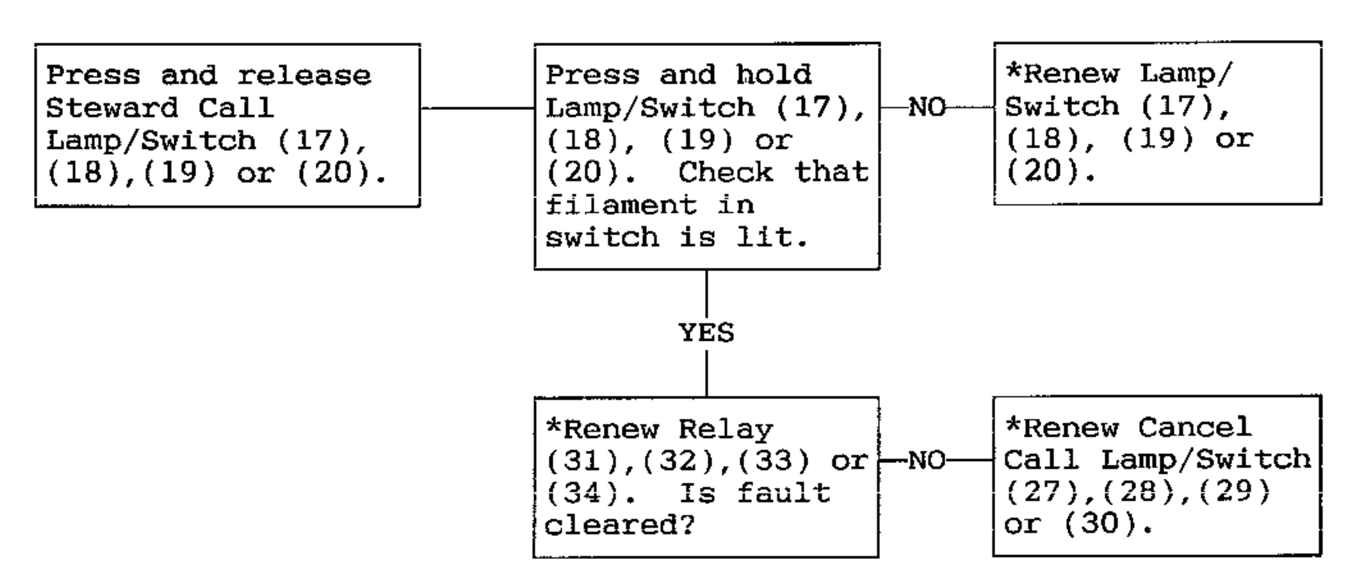


Chart 104

```
*****************************
*NO TONE SIGNAL AND NO      *
*INDICATOR LIGHT WHEN       *
*STEWARD CALL LAMP/SWITCH   *
*PRESSED AND RELEASED.      *
*****************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

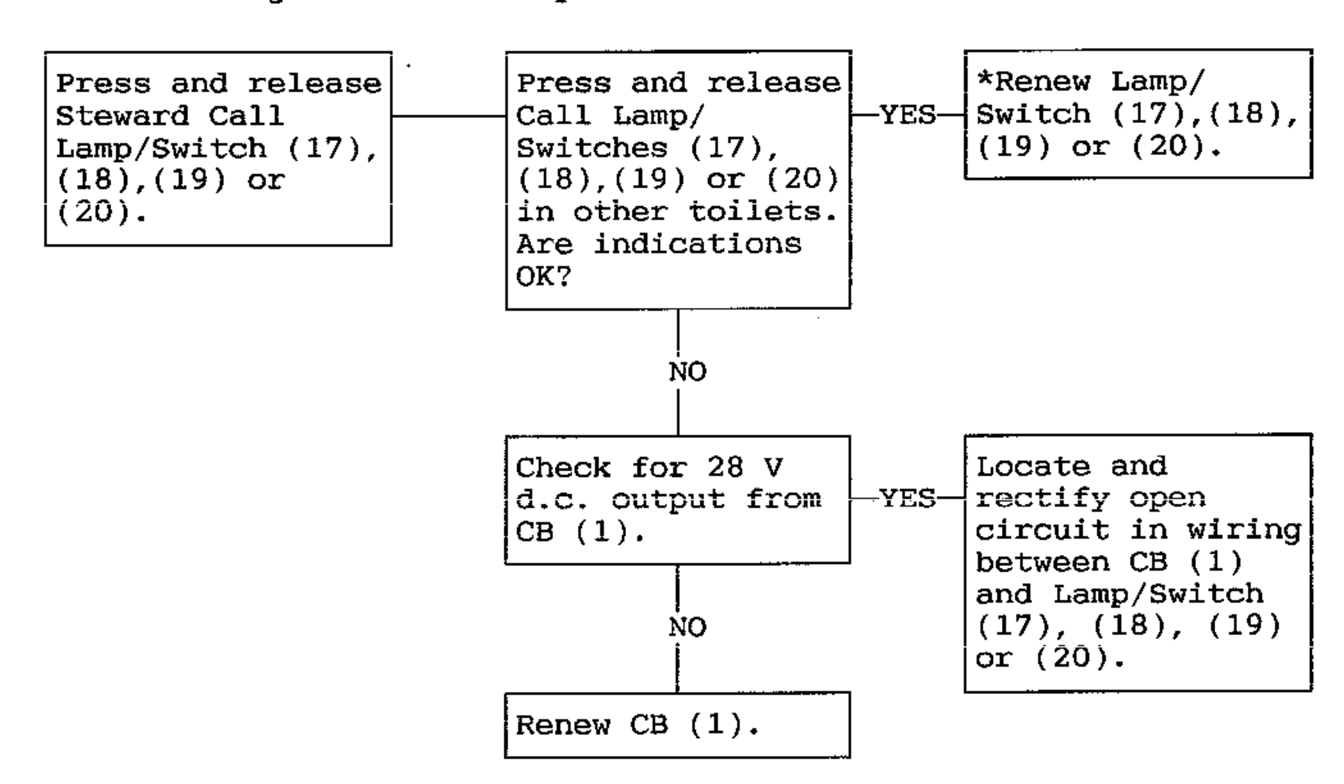


Chart 105

R

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit breaker 28 V	-	15-216	M78	Map ref.A22	24-50-00 R/I	33-27-11 33-27-12 33-27-13
(2) STEWARD CALL lamp/ switch	-	4-211	M79	Pilots' roof panel	33-00-00 R/I	33-27-11
(3) FLIGHT DECK CALL lamp/switch	-	2-221	M90	Fwd. steward's call panel	33-20-00 R/I	33-27-11
(4) FLIGHT DECK CALL lamp/switch	-	1-223	M177	Centre steward's control panel	33-20-00 R/I	33-27-11
(5) FLIGHT DECK CALL lamp/switch	-	1-241	M186	Rear steward's control panel	33-20-00 R/I	33-27-11
(6) Flight deck call relay	-	1-221	M86	Fwd. steward's control panel	33-20-00 R/I	33-27-11
(7) Flight deck call CANCEL switch	-	2-221	M96	Fwd. steward's call panel	33-20-00 R/I	33-27-11
(8) Flight deck call CANCEL switch	-	1-223	M179	Centre steward's control panel	33-20-00 R/I	33-27-11
(9) Flight deck call CANCEL switch	-	1-241	M185	Rear steward's control panel	33-20-00 R/I	33-27-11
(10) CABIN CREW CALL switch	-	2-221	M88	Fwd. steward's call panel	33-20-00 R/I	33-27-11 33-27-12

Component Identification
Table 101 (continued)

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ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(11) CABIN CREW CALL switch	-	1-223	M178	Centre steward's control panel	33-20-00 R/I	33-27-11 33-27-12
(12) CABIN CREW CALL switch	-	1-241	M184	Rear steward's control panel	33-20-00 R/I	33-27-11 33-27-12
(13) FWD CABIN CALL indicator lamp	-	1-221	M93	Fwd. steward's control panel	33-20-00 R/I	33-27-12
(14) FWD CABIN CALL indicator lamp	-	1-223	M97	Centre steward's control panel	33-20-00 R/I	33-27-12
(15) REAR CABIN CALL lamp	-	1-223	M91	Centre steward's control panel	33-20-00 R/I	33-27-12
(16) REAR CABIN CALL lamp	-	1-241	M98	Rear steward's control panel	33-20-00 R/I	33-27-12
(17) Toilet to steward call lamp/ switch	-	222	L981	Toilet 1	33-27-00 R/I	33-27-13
(18) Toilet to steward call lamp/ switch	-	223	L983	Toilet 2	33-27-00 R/I	33-27-13
(19) Toilet to steward call lamp/ switch	-	224	L984	Toilet 3	33-27-00 R/I	33-27-13

Component Identification
Table 101 (continued)

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(20) Toilet to steward call lamp/ switch	-	224	L982	Toilet 3A	33-27-00 R/I	33-27-13
(21) FWD TOILET indicator lamp	-	1-221	M89	Fwd. steward's control panel	33-20-00 R/I	33-27-13
(22) CENTRE TOILET indicator lamp	-	1-221	M199	Fwd. steward's control panel	33-20-00 R/I	33-27-13
(23) FWD TOILET indicator lamp	-	1-223	M187	Centre steward's control panel	33-20-00 R/I	33-27-13
(24) CENTRE TOILET indicator lamp	-	1-223	M94	Centre steward's control panel	33-20-00 R/I	33-27-13
(25) FWD TOILET indicator lamp	-	1-241	M176	Rear steward's control panel	33-20-00 R/I	33-27-13
(26) CENTRE TOILET indicator lamp	-	1-241	M175	Rear steward's control panel	33-20-00 R/I	33-27-13
(27) Cancel call lamp/ switch	-	222	L981 (item 21)	Toilet 1	33-27-00 R/I	33-27-13
(28) Cancel call lamp/ switch	-	223	L983 (item 21)	Toilet 2	33-27-00 R/I	33-27-13

Component Identification
Table 101 (continued)

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(29) Cancel call lamp/ switch	-	224	L984 (item 21)	Toilet 3	33-27-00 R/I	33-27-13
(30) Cancel call lamp/ switch	-	224	L982 (item 21)	Toilet 3A	33-27-00 R/I	33-27-13
(31) Toilet 1 relay	-	1-221	M83	Fwd. steward's control panel	33-20-00 R/I	33-27-13
(32) Toilet 2 relay	-	1-223	M85	Centre steward's control panel	33-20-00 R/I	33-27-13
(33) Toilet 3 relay	-	1-223	M84	Centre steward's control panel	33-20-00 R/I	33-27-13
(34) Toilet 3A relay	-	1-223	M200	Centre steward's control panel	33-20-00 R/I	33-27-13
(35) Fwd. centre aisle indicator lamp	-	221	M95	Fwd. cabin roof	-	33-27-12 33-27-13
(36) Centre aisle indicator lamp	-	223	M193	Fwd. cabin roof	-	33-27-12 33-27-13
(37) Centre aisle indicator lamp	-	231	M194	Rear cabin roof	-	33-27-12 33-27-13
(38) Aft centre aisle indicator lamp	-	242	M180	Rear cabin roof	-	33-27-12 33-27-13

Component Identification
Table 101 (concluded)

CALL SYSTEMS - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains instructions for the removal and installation of the toilet-to-steward call indicator lamp/switch mounted in each toilet, the cancel-call indicator lamp/switch outside each toilet door and the passenger cabin-to-steward call indicator lamp/switch on each passenger service unit (PSU) above the seats in the passenger cabins.

After SB 33-015 For A/C 001-001,

The topic also includes instructions for the renewal of a faulty cabin-call ceiling-mounted indicator lamp filament.

Instructions for the removal and installation of call system switches, indicator lamps and relays, mounted on the steward's panels, are contained in 33-20-00 and, for the steward call indicator lamp/switch on the flight compartment roof panel, in 33-00-00.

2. Toilet-to-Steward Call Indicator Lamp/Switch

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

R (1) Trip the PASS CALL SUP circuit breaker M78, on panel 15-216, map ref.A22, and fit a safety clip.

(2) Open the toilet inboard console door.

(3) Remove the screws securing the top cover to the wash basin top assembly and remove the cover to gain access to the switch.

C. Remove

(1) Unscrew the knob from the switch.

(2) Using a tubular spanner, remove the nut and washer from the front of the switch.

(3) Disconnect the electrical cables from the terminals and withdraw the switch from the rear of the mounting bracket. Label the cables to assist identification for reconnection.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the indicator lamp/switch to the switch mounting bracket. Orientate the switch body and, from the front , secure it friction-tight with the nut and washer.

(3) Connect the electrical cables to the switch terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Tighten the securing nut.

(5) Ensure that the switch knob contains a filament, then refit the knob to the switch.

E. Conclusion

(1) Refit the cover to the wash basin top assembly and secure it with the screws.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Remove the safety clip and reset the circuit breaker tripped before removal.

(4) Press and release the indicator lamp/switch and check that the filament in the knob is lit, a tone signal is audible through the public address system, the associated toilet call indicator lamps are lit, and the cancel-call indicator lamp/switch outside the toilet door is lit.

(5) Press and release the cancel-call indicator lamp/ switch and check that all associated toilet call

indicator lights are extinguished.

(6) Close the toilet console door.

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Toilet Cancel-call Indicator Lamp/Switch

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

R (1) Trip the PASS CALL SUP circuit breaker M78, on panel 15-216, map ref.A22, and fit a safety clip.

(2) Pull the toilet roof panel downward to release the spire fasteners and remove the panel to gain access to the rear of the switch on the fore-and-aft bulkhead above the toilet door.

C. Remove

(1) Unscrew the knob from the switch.

(2) Using a tubular spanner, remove the nut and washer from the front of the switch and withdraw the switch from its housing in the bulkhead sufficiently to gain access to the terminal screws.

(3) Disconnect the electrical cables from the switch terminals and remove the switch. Label the cables to assist identification for reconnection.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the switch and connect the electrical cables to the switch terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(3) Place the switch in its housing in the bulkhead

and, from the front, secure it to the mounting plate with the nut and washer.

(4) Ensure that the switch knob contains a filament, then refit the knob to the switch.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the circuit breaker tripped before removal.

(3) Press and release the associated steward call indicator lamp/switch in the toilet and check that the filament in the cancel-call indicator lamp/ switch and the associated toilet call indicator lamps are lit.

(4) Press and release the cancel=call indicator lamp/ switch and check that all associated toilet call indicator lights are extinguished.

(5) Place the toilet roof panel in position and push it upward to engage the spire fasteners.

(6) Switch off and disconnect the electrical ground power as detailed in 24-41-00.

4. Passenger Cabin-to Steward Call Indicator Lamp/Switch

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

R (1) Trip the PASS CALL SUP circuit breaker M78, on panel 15-216, map ref.A22, and fit a safety clip.

(2) Trip the appropriate reading lights transformer supply circuit breaker listed below and fit a safety clip.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH FWD PASS RDG LTS TRANS SUP	13-216	L884	C8
LH FWD PASS RDG LTS TRANS SUP	13-216	L885	C9
RH AFT PASS RDG LTS TRANS SUP	13-215	L886	E11
LH AFT PASS RDG LTS TRANS SUP	13-215	L887	E12

(3) Remove the appropriate air-vane and fairing assembly from the service panel. Pull the PSU inboard to release it from the locating and fixing brackets and lower the PSU on its hinges (Ref. 25-21-00) to gain access to the rear of the switch mounting plate.

C. Remove

(1) Unscrew the knob from the switch.

(2) Using a tubular spanner, remove the nut and washer from the front of the switch.

(3) Disconnect the electrical cables from the switch terminal and withdraw the switch from the rear of the mounting plate. Label the electrical cables to assist identification for reconnection.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the indicator lamp/switch to the mounting plate and, from the front, secure it friction-tight with the nut and washer.

(3) Connect the electrical cables to the switch terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Tighten the securing nut.

(5) Ensure that the switch knob contains a filament, then refit the knob to the switch.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) Press and release the call switch. Check that the filament in the knob is lit, a tone signal is audible through the public address system and that the associated cabin call indicator lamps are lit.

(4) Press and release the call switch again and check that all associated cabin call indicator lights are extinguished.

(5) Close the PSU and push it upward to engage it with the locating and fixing brackets (25-21-00). Fit the air-vane and fairing assembly to the service panel.

(6) Switch off and disconnect electrical ground power as detailed in 24-41-00.

R After SB 33-015 For A/C 001-001,

R 5. Ceiling-mounted Indicator Lamp Filament Renewal

R A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

R B. Prepare to Renew Filament

R (1) Trip the PASS CALL SUP circuit breaker M78, on panel 15-216, map ref.A22, and fit a safety clip.

R C. Renew Filament

R (1) Ease the lamp lens downward to release the rim
R of the lens from the mounting in the ceiling
R panel.

R (2) Renew the faulty filament.

R (3) Fit the lens to its opening in the ceiling panel
R and push the lens upward until the rim of the
R lens is engaged in its mounting in the ceiling
R panel.

R D. Conclusion

R (1) Reset the circuit breaker tripped before renewal.

R (2) Press and release the call switch on any passenger
R service unit (PSU) in the appropriate forward or
R rear cabin and verify that the filament is lit.
R Press and release the call switch again to switch
R the light off.

CALL SYSTEMS - ADJUSTMENT/TEST

1. General

This topic details the procedure for a Functional Test only, to prove that the call systems are electrically and functionally correct. Operational and System Tests are not considered necessary in this application.

2. Functional Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test Flight Compartment (Deck) Steward-call System

(1) Press and release the STEWARD CALL indicator lamp/switch on the flight compartment roof panel and check that a tone signal is audible through the public address system (Ref. 23-31-00) in the vestibule areas only, and that the FLIGHT DECK CALL indicator lamp on the forward steward's call panel and on each of the centre and rear steward's control panels light. Check that the four roof indicator repeater lamps light.

(2) Press and release the CANCEL switch on the forward steward's call panel and check that the FLIGHT DECK CALL indicator light at each steward's panel is extinguished.

(3) Repeat operations (1) and (2) at the centre and rear steward's control panels, in turn.

(4) Press the FLIGHT DECK CALL indicator lamp/switch at the forward steward's call panel and check that the STEWARD CALL indicator lamp/switch on the flight compartment roof panel lights and that an audible warning is given through the pilot audible indicator in the flight compartment (Ref. 23-42-00). Release the lamp and check that the light is extinguished and the audible warning is terminated.

(5) Repeat operation (4) at the centre and rear steward's control panels, in turn.

C. Test Cabin Crew Call System

(1) Press and release the CABIN CREW CALL switch at the

forward steward's call panel and check for a tone signal through the public address system, in the vestibule areas only.

(2) Repeat operation (1) at the centre and rear steward's control panels, in turn.

D. Test Passenger Cabin Steward-call System

(1) Press and release the call switch on any passenger service unit (PSU) in the forward cabin and check that the filament in the knob lights, a tone signal is audible through the public address system in the vestibule areas only, and that the following indicator lamps light:

(a) The FWD CABIN CALL indicator lamp on each of the forward and centre steward's control panels.

(b) The three forward ceiling indicator lamps in the cabin aisle.

(2) Press the call switch again and check that all associated indicator lights are extinguished.

(3) Repeat operations (1) and (2) at each forward cabin PSU, in turn.

(4) Press and release the call switch on any PSU in the rear cabin and check that the filament in the knob lights, a tone signal is audible through the public address system in the vestibule areas only, and that the following indicator lamps light:

(a) The REAR CABIN CALL indicator lamp on each of the centre and rear steward's control panels.

(b) The three rear ceiling indicator lamps in the cabin aisle.

(5) Press the call switch again and check that all associated indicator lights are extinguished.

(6) Repeat operations (4) and (5) at each rear cabin PSU in turn.

E. Test Toilet Steward-call System

(1) Press and release the steward call indicator lamp/switch in the forward toilet and check that the filament in the knob lights, a tone signal is audible through the public address system in the

vestibule areas only, and that the following indicator lamps light:

(a) The FWD TOILET call indicator lamp on each of the forward, centre and rear steward's control panels.

(b) All the ceiling indicator lamps in the cabin aisle.

(c) The indicator lamp/switch outside the forward toilet door.

(2) Press the indicator lamp/switch outside the forward toilet door and check that all toilet call indicator lights are extinguished.

(3) Press and release the steward call indicator lamp/switch in the centre left toilet and check that the filament in the knob lights, a tone signal is audible through the public address system in the vestibule areas only, and that the following indicator lamps light:

(a) The CENTRE TOILET call indicator lamp/switch on each of the forward, centre and rear steward's control panels.

(b) All the ceiling indicator lamps in the cabin aisle.

(c) The indicator lamp/switch outside the centre left toilet door.

(4) Press the indicator lamp/switch outside the centre left toilet door and check that all toilet call indicator lights are extinguished.

(5) Repeat operations (3) and (4) with respect to the two centre right toilets.

F. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

Printed in England

STEWARDS' PANEL LIGHTING - DESCRIPTION AND OPERATION

1. General

RB Panel lighting was provided by electroluminescent (EL) panels
RB which illuminated legends and other markings engraved on them.
RB Mod 33F085 removes the power supplies to the EL panel and also
RB the associated circuit breaker L9003 and panel connector L9008A.

RB

PANEL - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains instructions necessary for the removal and installation of electroluminescent (EL) panels fitted on the Stewards' panel (1-221).

RB

2. Electroluminescent Panels

CAUTION: 'EL' PANELS ARE VULNERABLE TO DAMAGE BY SCRATCHING AND CRACKING. ENSURE THAT THE SCREWDRIVER DOES NOT DAMAGE THE POLISHED WALL OF THE PANEL.

RB A. Prepare

(1) Remove the cap, unscrew the clutch nut and withdraw the knob from any rotary switch fitted on the EL panel.

RB B. Remove an EL Panel

(1) Remove the screws and washers securing the EL panel
RB to its mounting and remove the panel.

RB C. Install an EL Panel

RB (1) Position the EL panel on its mounting and secure it with the screws and washers.

RB D. Conclusion

(1) Where appropriate, fit each switch knob on its spindle, ensuring that the spindle drive spigot is engaged with the slot in the knob. Tighten the clutch nut and fit the end cap to the knob.

RB

END OF THIS SECTION

NEXT

BAGGAGE COMPARTMENT LIGHTING - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

There are two baggage compartments, one forward under the floor aft of the nosewheel bay, and one at the rear of the passenger compartment. Lighting of the forward baggage compartment is by five filament lamps for general illumination, and a floodlamp to illuminate the baggage door area. Lighting of the rear baggage compartment is by six filament lamps, and a floodlamp to illuminate the rear baggage door area.

Primary control of the front and rear baggage compartment lighting is by an associated lighting control relay which is operated by the respective baggage door microswitch. Secondary control is by a light control switch in each baggage compartment.

The forward baggage compartment lighting control relay is mounted in the ground power panel (panel 10-123) in the forward underfloor racking, and the rear baggage compartment lighting control relay is mounted in panel 7-244 in the right-hand rear racking main structure.

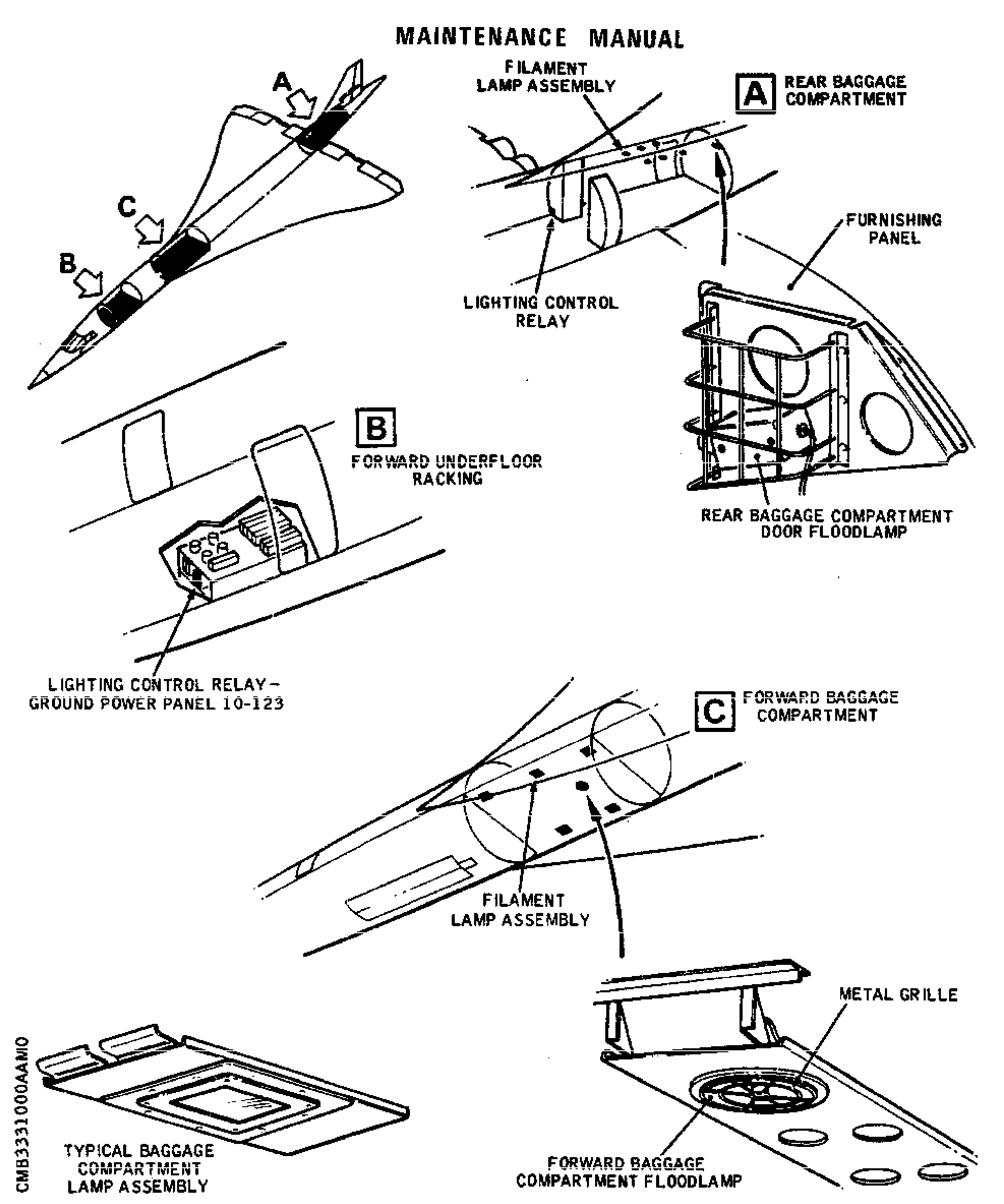
2. Filament Lamps

Each filament lamp is contained in a separate assembly with a protective translucent cover. The assemblies fit flush on to mounting plates fitted in each baggage compartment roof and spaced along the left and right sides.

3. Floodlamps

The floodlamp assembly in the forward baggage compartment comprises a single contact bayonet lamp in an elliptical reflector housing containing a white diffused glass lens behind a protective metal grille. The lamp assembly is secured to a mounting plate which is fitted in the baggage compartment roof above the baggage compartment door.

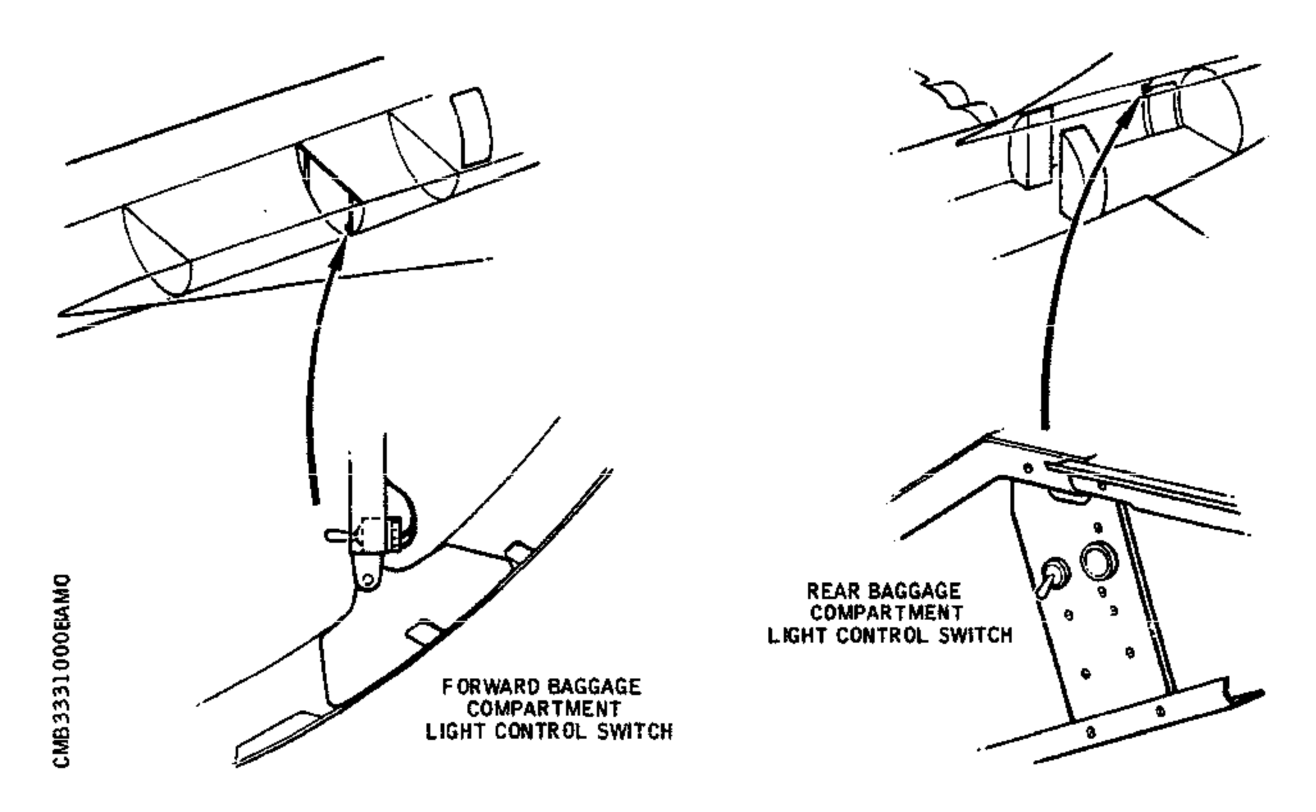
The floodlamp assembly in the rear baggage compartment comprises a single contact bayonet lamp within a cover assembly, which forms a reflector housing, and is fitted with an adjustable visor. The lamp assembly is secured to a mounting plate fitted to a furnishing panel on the baggage compartment after bulkhead, above the baggage compartment door, and is guarded by a protective metal cage.



- Baggage Compartment Lamps and Equipment
Figure 001

4. Operation

A. Control (Ref. Fig. 002)

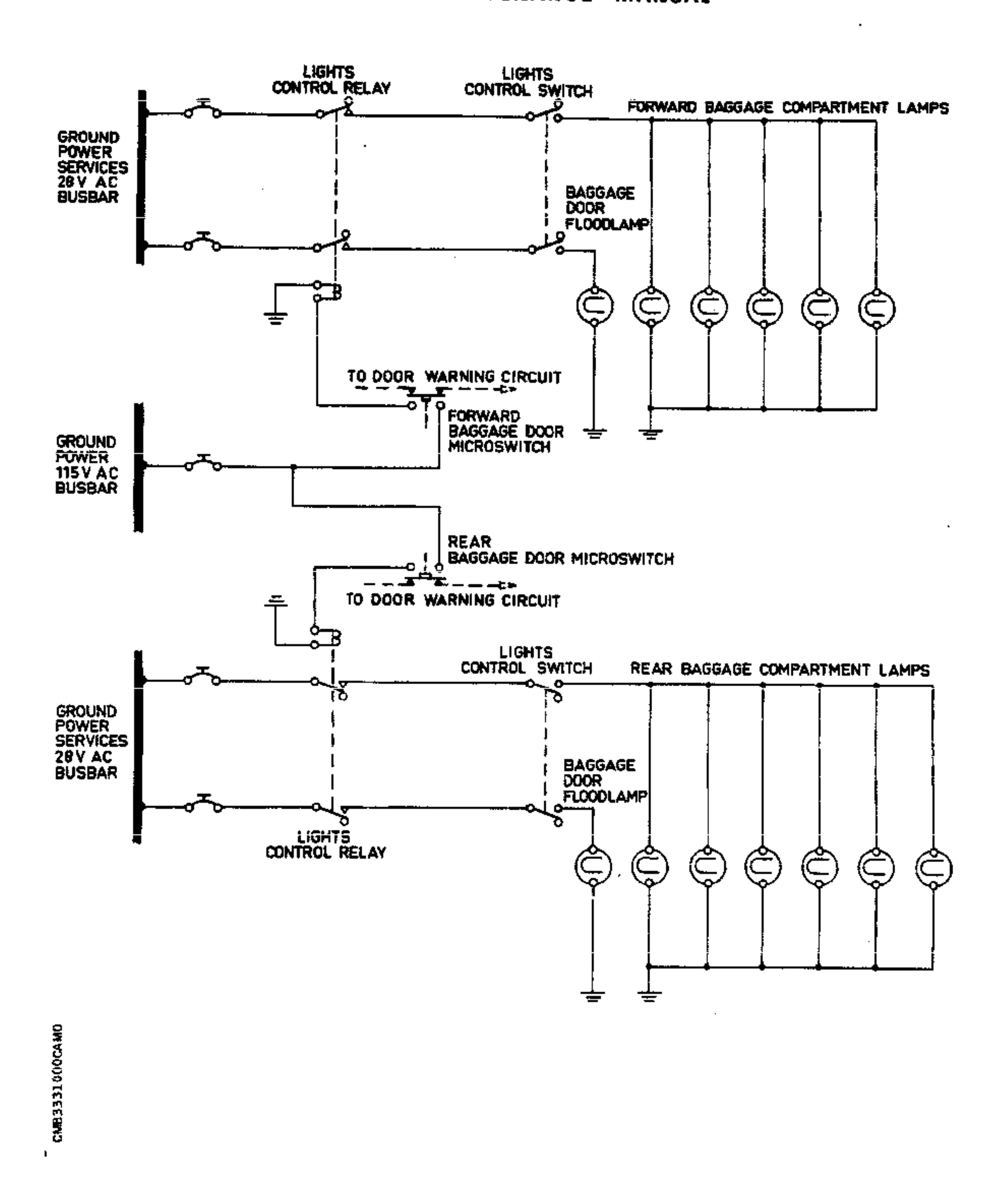


- Baggage Compartment Lighting - Control
Figure 002

The forward and rear baggage compartment filament lamps and door floodlamps are supplied from the ground power services 28 V a.c. busbar, through the contacts of the associated baggage compartment lighting control relay and the appropriate double-pole, two position (on-off) light control switch in each baggage compartment. Each relay is supplied from one phase of the ground power 115 V a.c. busbar, and is controlled by the operation of the associated baggage compartment door microswitch.

B. Functional Description (Ref. Fig. 003)

With electrical supplies available, the opening of a baggage compartment door operates a microswitch which activates a door warning circuit (Ref. 52-71-00), and connects a 115 V a.c. supply to energize the associated lights control relay. When energized, the relay



- Baggage Compartment Lighting - Simplified Schematic
Figure 003

contacts close and connect a 28 V a.c. supply to the contacts of the associated double-pole lighting control switch. With the switch on, one set of contacts connects a supply to light the appropriate baggage compartment filament lamps and the other set of contacts connects a supply to light the door floodlamp.

Printed in England

R

BAGGAGE COMPARTMENT LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. GENERAL

Faults are dealt with on a probability basis and identified as a result of testing. They can also develop on the ground or during flight.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para. 3.), and traced through IF OK and IF NOT OK paths to the approriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

The forward and the rear baggage compartment lighting circuits are similar, therefore the procedures and charts are applicable to either. Where two identical components are involved, i.e., one in each circuit, both references to the associated components listed in Table 101 are given, e.g., 'Renew Microswitch (10) or (11)'.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

C. Open the forward or rear baggage compartment door, as appropriate.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para. 2.). As appropriate, set forward or rear baggage compartment lights control switch to 'ON'. Check that all associated baggage compartment filament lamps and the door floodlamp are lit.

OK — continue to B.

NOT OK:

1. One compartment filament fails to light - change filament. Retest.
2. Baggage compartment filaments lit but door floodlamp not lit - Chart 101.
3. Door floodlamp lit but compartment filaments not lit - Chart 102.
4. Compartment filaments and door floodlamp not lit - Chart 103.

B. As appropriate, depress forward or rear baggage door microswitch, manually, and check that the associated baggage compartment lights and door floodlight go out.

NOT OK — Adjust or renew Microswitch (10) or (11).

BAGGAGE COMPARTMENT FILAMENTS LIT BUT DOOR FLOODLAMP NOT LIT WHEN SWITCHED ON

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

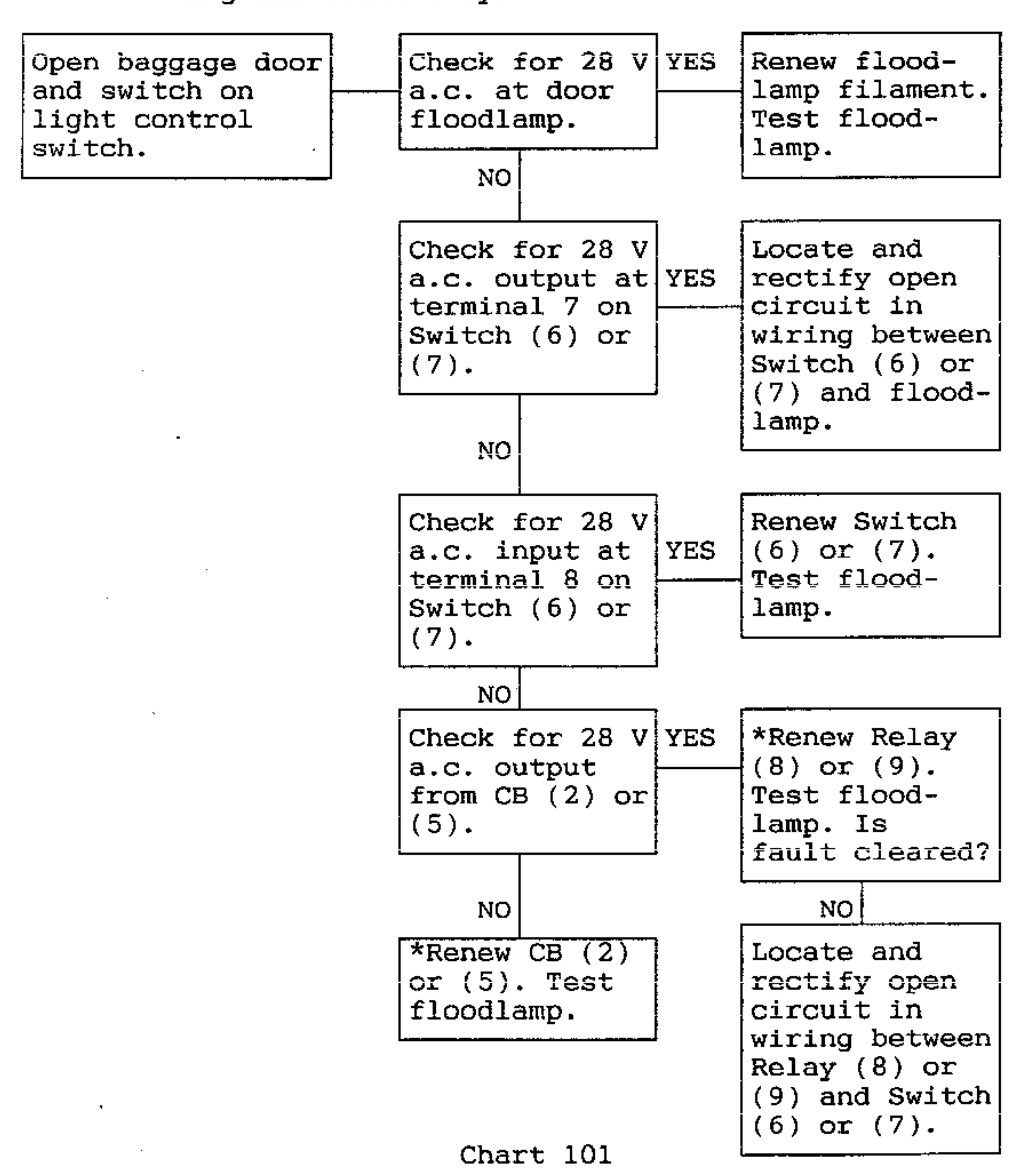


Chart 101

DOOR FLOODLAMP LIT BUT COMPARTMENT FILAMENTS NOT LIT WHEN SWITCHED ON

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

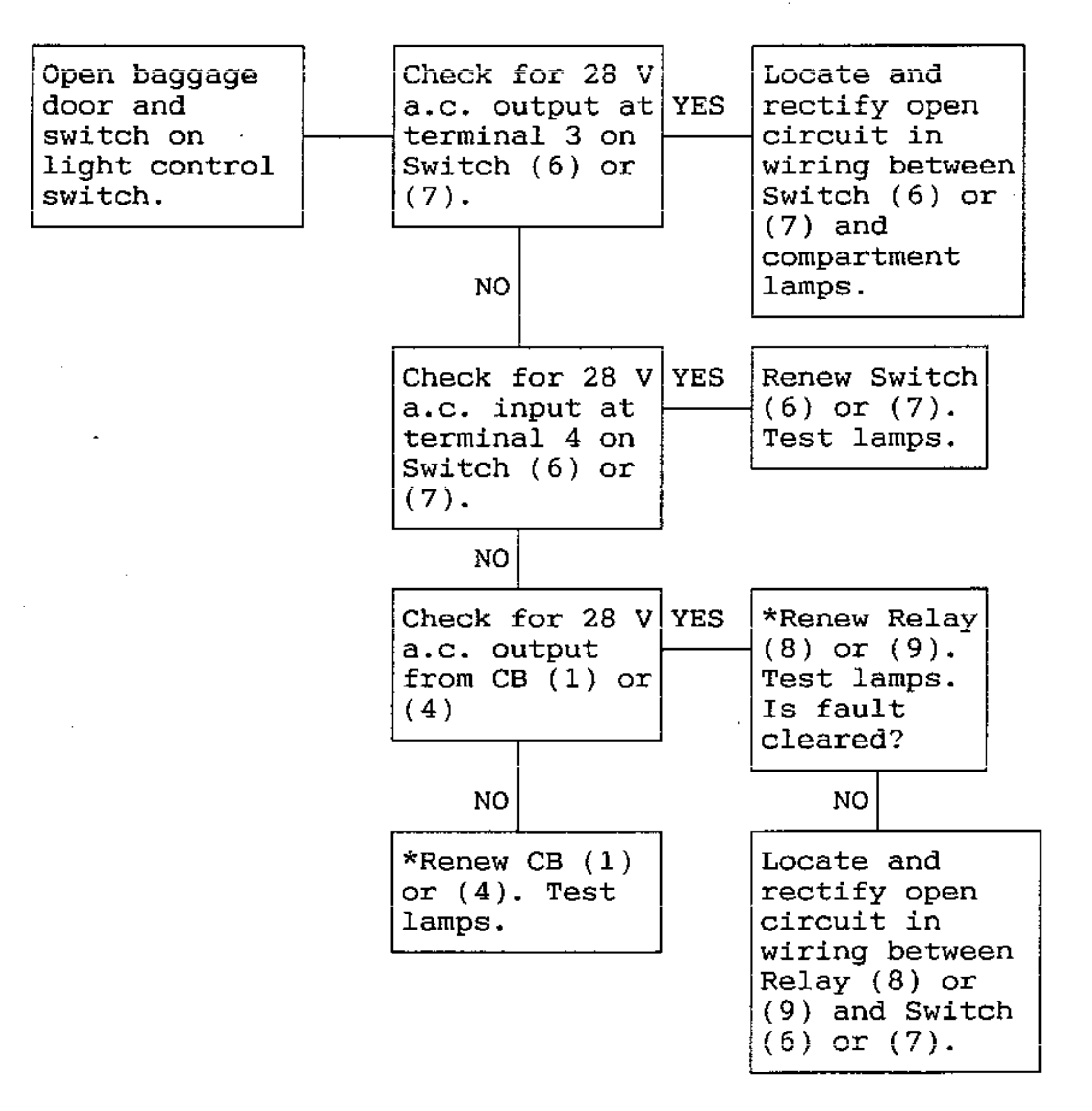


Chart 102

COMPARTMENT FILAMENTS AND DOOR FLOODLAMP NOT LIT WHEN SWITCHED ON

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

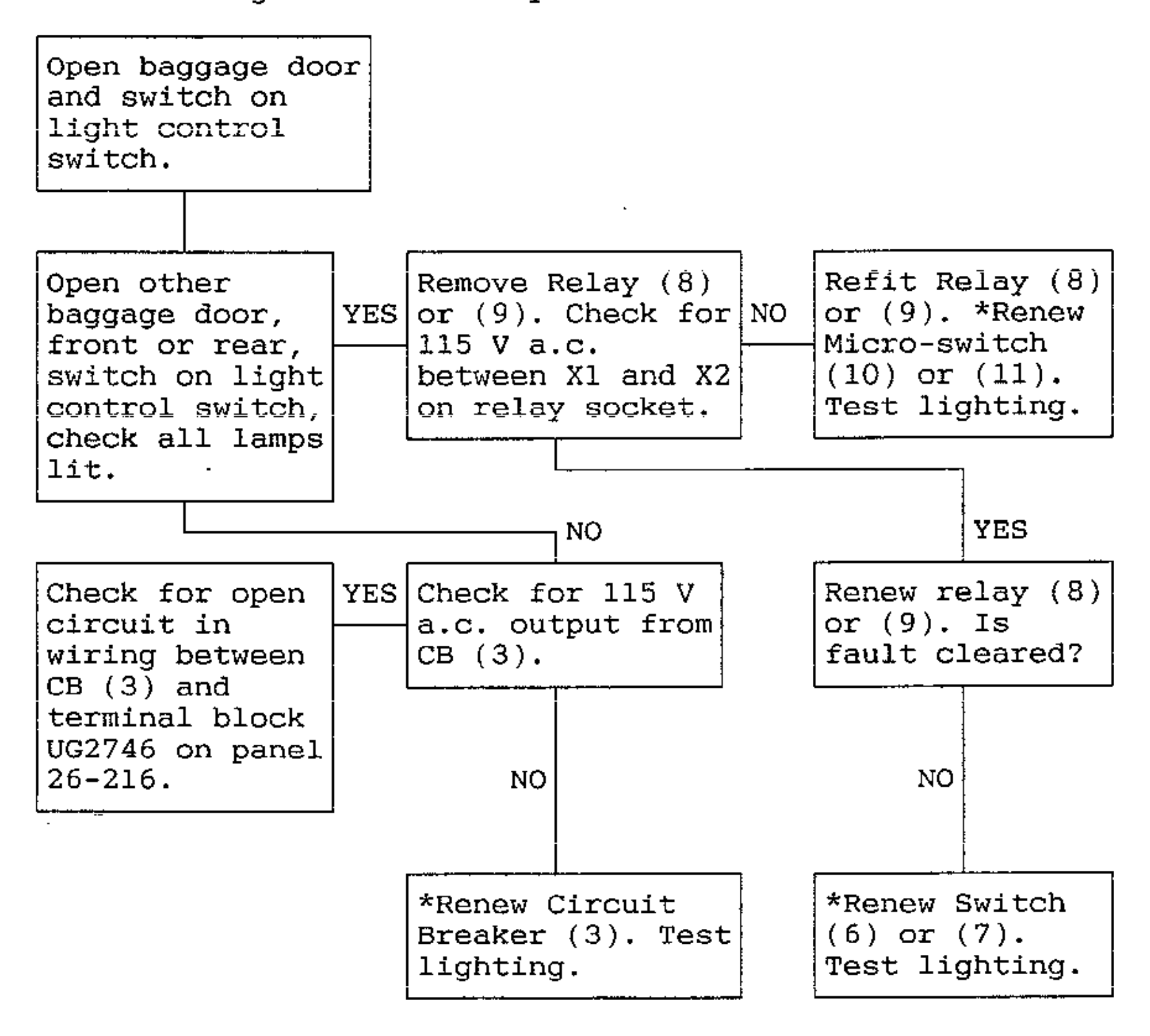


Chart 103

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit Breaker 28 V	-	25-216	L763	Map ref.C2	24-50-00 R/I	
(2) Circuit Breaker 28 V	-	25-216	L762	Map ref.C3	24-50-00 R/I	
(3) Circuit Breaker 115 V	-	25-216	X368	Map ref.B4	24-50-00 R/I	
(4) Circuit Breaker 28 V	-	25-216	L764	Map ref.C5	24-50-00 R/I	
(5) Circuit Breaker 28 V	-	25-216	L765	Map ref.C4	24-50-00 R/I	
(6) Forward lights control switch	-	131	L771	Forward baggage compartment		
(7) Rear lights control switch	-	244	L772	Rear baggage compartment		
(8) Forward lights control relay	123 AB	10-213	L768	Forward underfloor racking	33-31-00 R/I	
(9) Rear lights control relay	-	7-244	L769	Rear racking	33-31-00 R/I	
(10) Forward door micro-switch	-	131	W308	Forward baggage compartment	52-31-21 R/I	
(11) Rear door microswitch	-	244	W304	Rear baggage compartment	52-31-11 R/I	

Component Identification
Table 101

R

BAGGAGE COMPARTMENT LIGHTING - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains instructions for the renewal of filaments in the forward and rear baggage compartments, and for the removal and installation of associated lamp assemblies, light control relays and light control switches.

Instructions for the removal and installation of each baggage compartment door microswitch are contained in Chapter 52.

2. Baggage Compartment Filaments

A. Roof Lamp Filament Renewal

(1) Ensure that the forward or rear baggage compartment light control switch is off.

(2) Release the two quick-release fasteners securing the lamp cover to the lamp assembly and lower the cover on its hinges to gain access to the filament.

(3) Renew the filament.

(4) Close the lamp cover and secure it with the quick-release fasteners.

(5) Make available electrical ground power as detailed in 24-41-00.

(6) With the appropriate baggage compartment door open, switch on the light control switch and check that the filament is lit.

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

B. Forward Baggage Compartment Door Floodlamp Filament Renewal

(1) Ensure that the forward baggage compartment light control switch is off.

(2) Rotate the door floodlamp cover counter-clockwise and withdraw the cover from the lamp.

(3) Renew the filament.

(4) Refit the cover to the lamp and rotate the cover clockwise to lock the retainer spring.

(5) Make available electrical ground power as detailed in 24-41-00.

(6) With the forward baggage compartment door open, switch on the light control switch and check that the filament is lit.

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

C. Rear Baggage Compartment Door Floodlamp Filament Renewal

(1) Ensure that the rear baggage compartment light control switch is off.

(2) Remove the bolts and washers securing the protective cage to the furnishing panel on the rear baggage compartment aft bulkhead and remove the cage.

(3) Remove the screws and washers securing the floodlamp cover to the baseplate and withdraw the cover sufficiently to gain access to the lampholder.

(4) Remove the lampholder from the retainer clip and renew the filament.

(5) Refit the lampholder to the retainer clip.

(6) Refit the cover to the baseplate and secure it with the screws and washers.

(7) Fit the cage to its mounting on the furnishing panel and secure it with the bolts and washers.

(8) Make available electrical ground power as detailed in 24-41-00.

(9) With the rear baggage compartment door open, switch on the light control switch, and check that the filament is lit.

(10) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Baggage Compartment Roof Lamp

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Trip the FWD BAGGAGE LTS SUP circuit breaker L763, on panel 25-216, map ref.C2, or the AFT BAGGAGE LTS SUP circuit breaker L764 on panel 25-216, map ref.C5, as appropriate, and fit a safety clip.

C. Remove

(1) Release the two quick-release fasteners securing the lamp cover to the lamp assembly and lower the cover on its hinges.

(2) Remove the screws securing the lamp to its roof mounting and withdraw the lamp sufficiently to gain access to the terminal screws.

(3) Disconnect the electrical cables from the terminals and remove the lamp.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the lamp and connect the electrical cables to the terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(3) Fit the lamp to its roof mounting and secure it with the screws.

(4) Close the lamp cover and secure it with the quick-release fasteners.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clips and reset the circuit breaker tripped before removal.

(3) With the appropriate baggage compartment door open and the light control switch on, check that the lamp is lit.

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

4. Forward Baggage Compartment Door Floodlamp

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clip	-

B. Prepare

(1) Trip the FWD BAGGAGE DOOR FLOOD LT SUP circuit breaker L762, on panel 25-216, map ref.C3, and fit a safety clip.

C. Remove

(1) Rotate the floodlamp cover counter-clockwise and withdraw the cover from the lamp.

(2) Remove the screws securing the lamp to its roof mounting and withdraw the lamp sufficiently to gain access to the terminal screws.

(3) Disconnect the electrical cables from the lamp terminals and remove the lamp.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the lamp and connect the electrical cables to the lamp terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(3) Fit the lamp to its roof mounting and secure it with the screws.

(4) Fit the cover to the lamp and rotate the cover clockwise to lock the retainer spring.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the circuit breaker tripped before removal.

(3) With the forward baggage compartment door open and the light control switch on, check that the floodlamp is lit.

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

5. Rear Baggage Compartment Door Floodlamp

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clip	-

B. Prepare

(1) Trip the AFT BAGGAGE DOOR FLOOD LT SUP circuit breaker L765, on panel 25-216, map ref.C4, and fit a safety clip.

C. Remove

(1) Remove the bolts and washers securing the protective cage to the furnishing panel on the rear baggage compartment aft bulkhead and remove the cage.

(2) Remove the screws and washers securing the floodlamp cover to the baseplate and withdraw the cover sufficiently to gain access to the lampholder.

(3) Remove the lampholder from the retainer clip and disconnect the electrical cables from the lampholder.

(4) Withdraw the cover clear of the baseplate.

(5) Remove the bolts and washers securing the baseplate to the bulkhead and remove the baseplate.

D. Install

(1) Comply with the electrical safety precautions.

(2) Secure the baseplate to the bulkhead with the bolts and washers, friction-tight.

(3) Adjust the position of the baseplate to enable the lamp to illuminate the door area. Tighten the securing bolts.

(4) Insert the electrical cable through the grommet at the rear of the lamp cover and connect the cable to the lampholder, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(5) Fit the lampholder to the retainer clip.

(6) Fit the cover to its mounting on the baseplate and secure it with the screws and washers.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the circuit breaker tripped before removal.

(3) With the rear baggage compartment door open, switch on the light control switch and check that the floodlamp is lit.

(4) Adjust the cowl on the lamp cover so that the baggage compartment door area is illuminated.

(5) Refit the protective cage to the furnishing panel and secure it with the bolts and washers.

(6) Switch off and disconnect electrical ground power as detailed in 24-41-00.

6. Forward Baggage Compartment Light Control Relay

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clip	-

B. Prepare

(1) Trip the circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG/TAXI LT CONT	13-216	L42	B9
RH LDG/TAXI LT SUP	13-216	L46	B8
LH LDG/TAXI LT CONT	14-215	L41	E11
GRND POWER LTS SUP	25-216	X369	B9
GRND POWER SERVICES SUP	25-216	X368	B5
FWD BAGGAGE LTS SUP	25-216	L763	C2
FWD BAGGAGE DOOR FLOOD LT SUP	25-216	L762	C3

(2) Open service compartment door 123 AB (Ref. 52-41-11) to gain access to the light control relay in panel 10-123, mounted in the forward underfloor racking.

C. Remove

(1) Release the two hold-down fasteners from the panel hold-down hooks.

(2) Withdraw the panel from its mounting rack and remove the quick-release cable clamps to detach the cables from the top of the panel. When the panel is clear of the rack, lower the panel on to a suitable support.

(3) Remove the screws securing the top cover to the panel and remove the cover.

(4) Release the relay retaining clamp and withdraw the relay from its socket.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the relay into its socket and secure it with the retaining clamp.

(3) Fit the top cover to the panel and secure it with the screws.

(4) Place the panel on the end of the rack support rails and secure the cables to the top of the panel with the cable clamps.

(5) Slide the panel into the racking and secure it with the hold-down fasteners.

(6) Check that the panel is bonded in accordance with 20-27-11.

E. Conclusion

(1) Reset the circuit breakers tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Open the forward baggage compartment door and switch on the light control switch. Check that the forward baggage compartment lamps and the door floodlamp are lit.

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

(5) Close and secure service compartment door 123 AB (Ref. 52-41-11).

7. Rear Baggage Compartment Light Control Relay

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the rear baggage compartment door is closed.

(2) Trip the circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
AFT BAGGAGE LTS SUP	25-216	L764	C5
AFT BAGGAGE DOOR FLOOD LT SUP	25-216	L765	C4
GRND POWER SERVICES SUP	25-216	X368	B4

C. Remove

(1) Remove the lower furnishing panel from the rear right-hand electronic racking to gain access to the light control relay at the bottom of the outboard sidewall.

(2) Remove the securing screws and withdraw the relay from its socket.

D. Install

(1) Comply with the electrical safety precautions.

(2) Fit the relay into its socket and secure it with the retaining screws.

(3) Refit the furnishing panel to the racking.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) Open the rear baggage compartment door and switch the light control switch on. Check that the rear baggage compartment lamps and the door floodlamp are lit.

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

8. Baggage Compartment Light Control Switches

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Trip the associated circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FWD BAGGAGE LTS SUP	25-216	L763	C2
FWD BAGGAGE DOOR FLOOD LT SUP	25-216	L762	C3
AFT BAGGAGE LTS SUP	25-216	L764	C5
AFT BAGGAGE DOOR FLOOD LT SUP	25-216	L765	C4

(2) Open the appropriate baggage compartment door to gain access to the light control switch.

NOTE: There is direct access to the light control switch.

C. Remove

(1) Disconnect the electrical cables from the switch terminals.

(2) Using a tubular spanner, remove the nut and washer from the front of the switch, and withdraw the switch complete with tabwasher from the rear of its mounting panel.

D. Install

(1) Comply with the electrical safety precautions.

(2) Position the tabwasher on the switch and insert the switch through the aperture from the rear of the mounting panel, ensuring that the tab on the washer engages the locating hole in the panel.

(3) Secure the switch with the nut and washer.

(4) Connect the electrical cables to the switch terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) With the appropriate baggage compartment door open, switch on the light control switch and check that the baggage compartment lamps and the door floodlamp are lit.

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

BAGGAGE COMPARTMENT LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Baggage compartment lighting tests are contained under two headings: Operational Test, and Functional Test. A System Test is not considered necessary in this application. The Operational Test details the procedure for checking the operation of the baggage compartment lights. The Functional Test checks the baggage compartment lighting in more detail to prove that it is electrically and functionally correct.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test Forward Baggage Compartment Lighting

(1) With the forward baggage compartment door open and the baggage compartment lights control switch at OFF, check that the baggage compartment lights and the door floodlight are extinguished.

(2) Set the forward baggage compartment lights control switch to "ON" and check that the filament lamps and the door floodlamp are lit.

(3) Depress the baggage compartment door microswitch manually and check that the baggage compartment lights and the door floodlight are extinguished.

(4) Set the lights control switch to "OFF".

C. Test Rear Baggage Compartment Lighting

(1) With the rear baggage compartment door open and the rear baggage compartment lights control switch at OFF, check that the baggage compartment lights and the door floodlight are extinguished.

(2) Set the rear baggage compartment lights control switch to "ON" and check that the filament lamps and the door floodlamp are lit.

(3) Depress the rear baggage compartment door microswitch manually and check that the baggage compartment lights and the door floodlight are extinguished.

(4) Set the lights control switch to "OFF".

D. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

C. Test Forward Baggage Compartment Lighting

(1) Electrically isolate the supplies to the forward baggage compartment lights, the baggage door floodlight, and baggage compartment lights control relay, by tripping the associated circuit breakers listed below, and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FWD BAGGAGE LTS SUP	25-216	L763	C2
FWD BAGGAGE DOOR FLOODLT SUP	25-216	L762	C3
GRND POWER SERVICES SUP	25-216	X368	B4

(2) With the forward baggage compartment door open and the lights control switch at OFF, check that baggage compartment lights and the door floodlight are extinguished.

R (3) Remove the safety clip and reset the FWD
R BAGGAGE LTS SUP circuit breaker.

(4) Set the baggage compartment lights control switch to "ON" and check that the baggage compartment lights are extinguished.

R (5) Remove the safety clip and reset the FWD BAGGAGE
R DOOR FLOODLT SUP circuit breaker. Check that the door floodlight is extinguished.

R (6) Remove the safety clip and reset the GRND POWER
R SERVICES SUP circuit breaker. Check that the
R compartment lamps and door flood-lamp are lit.

(7) Depress the baggage door microswitch manually and check that the compartment lights and door floodlight are extinguished.

(8) Set the baggage compartment lights control switch to "OFF".

D. Test Rear Baggage Compartment Lighting

(1) Electrically isolate the supplies to the rear baggage compartment lights, the baggage door floodlight, and baggage compartment lights control relay, by tripping the associated circuit breakers listed below, and fit safety clips.

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R R	AFT BAGGAGE LTS SUP	25-216	L764	C5
R R	AFT BAGGAGE DOOR FLOODLT SUP	25-216	L765	C4
R R	GRND POWER SERVICES SUP	25-216	X368	B4

(2) With the rear baggage compartment door open and

the lights control switch at OFF, check that baggage compartment lights and the door floodlight are extinguished.

R R (3) Remove the safety clip and reset the AFT BAGGAGE LTS SUP circuit breaker.

(4) Set the baggage compartment lights control switch to "ON" and check that the baggage compartment lights are extinguished.

R R (5) Remove the safety clip and reset the AFT BAGGAGE DOOR FLOODLT SUP circuit breaker. Check that the door floodlight is extinguished.

R R R (6) Remove the safety clip and reset the GRND POWER SERVICES SUP circuit breaker. Check that the compartment lamps and door flood-lamp are lit.

(7) Depress the baggage door microswitch manually and check that the compartment lights and door flood-light are extinguished.

(8) Set the baggage compartment lights control switch to "OFF".

E. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

SERVICE LIGHTING - DESCRIPTION AND OPERATION

1. General (Ref. Fig.001 and 002)

   General illumination of the nose, equipment bays, landing gear bays, toilet servicing compartments and ground refuelling panel is provided by service lamps which light whenever the aircraft is connected to an electrical ground power supply, provided that a ground lighting control switch on the oxygen panel in the flight compartment is switched on.

   The instruments on the refuelling panel are integrally lit from a 115 V ground power supply through a 115/5.9 V control transformer, with the ground lighting control switch either on or off.

2. Service Lamp (Ref. Fig. 001)

   Each lamp comprises a base, containing a lampholder fitted with a filament, and a lens protected with a wire guard and secured to the base with screws. Electrical cables are connected to terminals in the base, which is bolted to the aircraft structure.

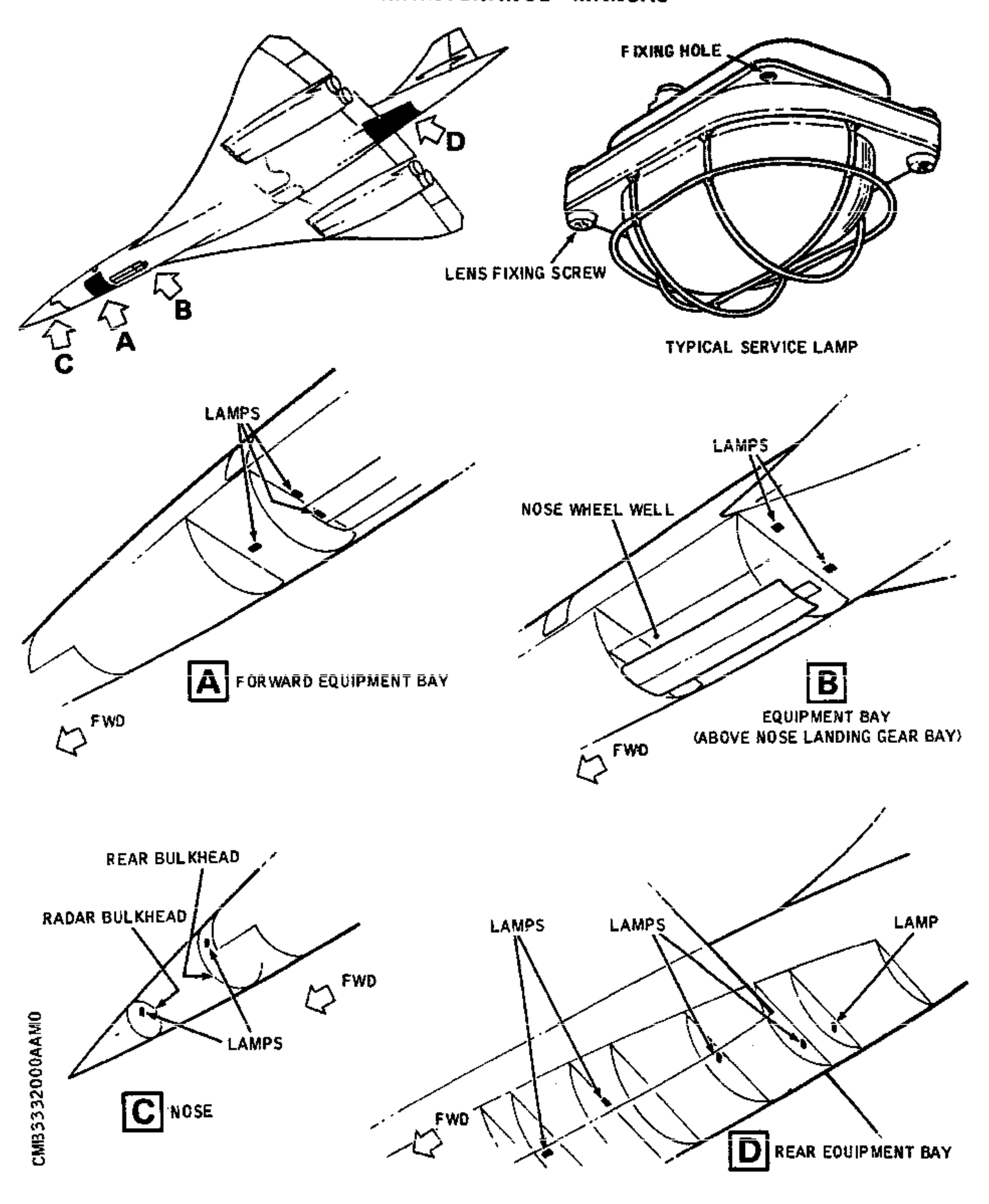
3. Control Transformer

   The control transformer, which is mounted in the forward baggage compartment, has a stepped primary supplied from a 115 V a.c., and controls the output voltage in five steps up to 5.9 V. The secondary output voltages are protected by fuses within the transformer case, and electrical connections are made at terminals on top of the transformer.

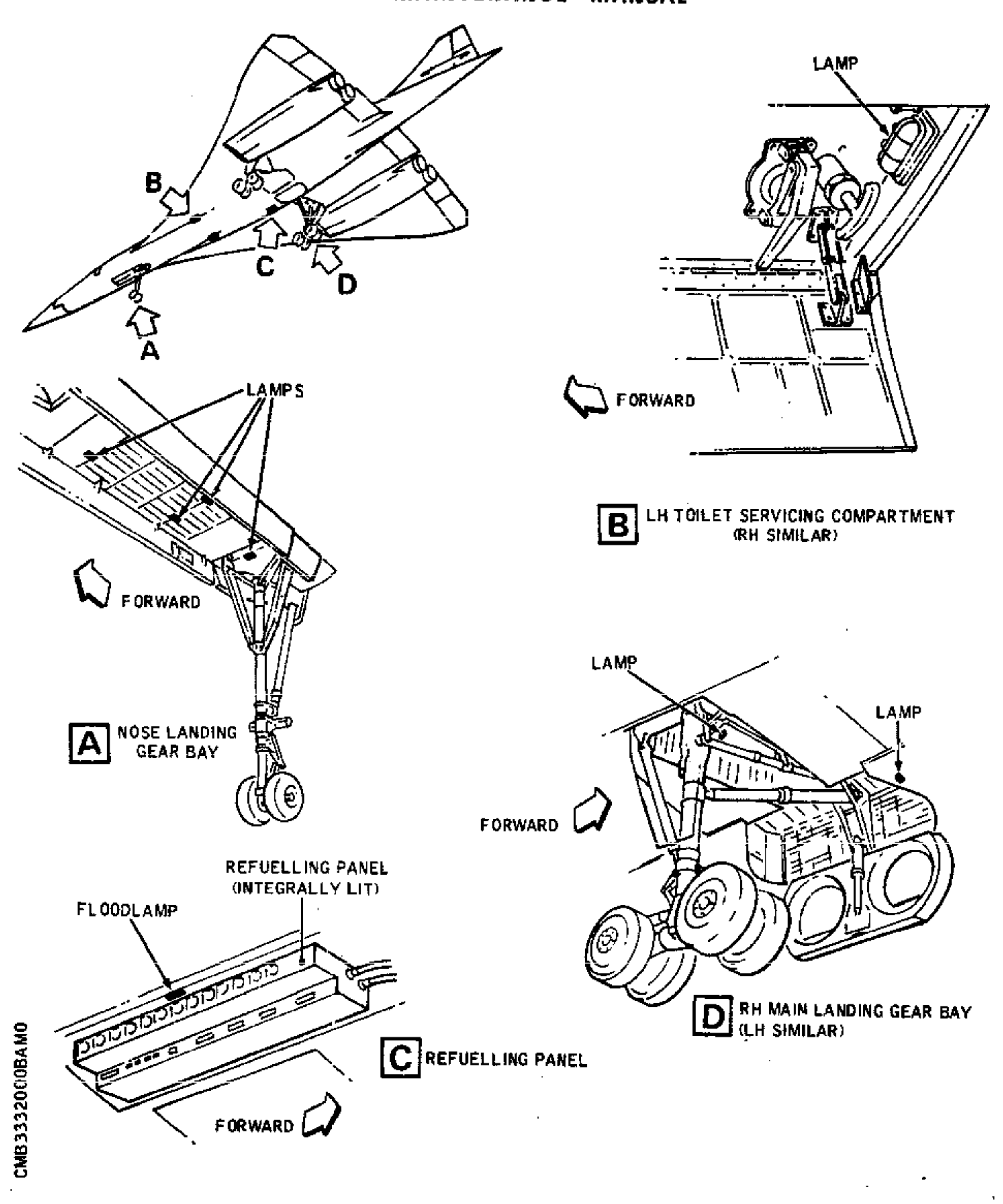
4. Operation (Ref. Fig. 003)

   All the lamps, except the refuelling panel floodlamp and integral lamps, light whenever there is a supply at the ground power 115 V a.c. busbar, provided that the ground lighting control switch on the oxygen panel in the flight compartment is switched on (Ref. 24-41-00).

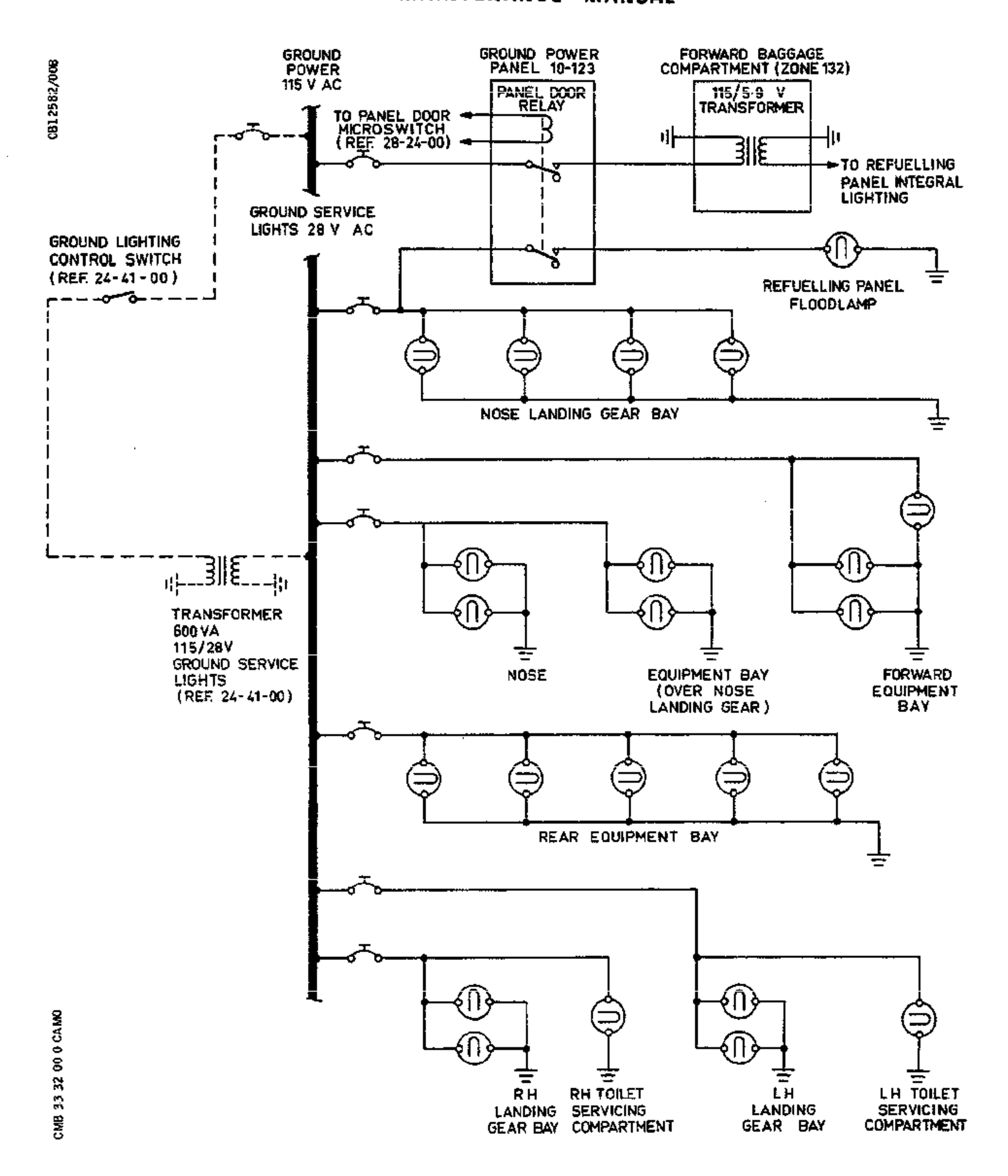
   A microswitch, operated by opening the refuelling panel access door, energizes a panel door relay which has two pairs of contacts. One pair of these contacts connects the supply from the ground service lights 28 V a.c. busbar to light the refuelling panel floodlamp. The other pair of contacts connects the supply from the ground power 115 V a.c. busbar via the 115/5.9 V control transformer, to supply the refuelling panel integral lighting, which is thus independent of the position of the ground lighting control switch.



– Service Lights – Nose and Equipment Bays
Figure 001



- Service Lights - Landing Gear Bays, Toilet Servicing Compartments and Refuelling Panel
Figure 002



- Service Lights - Simplified Schematic
Figure 003

R

SERVICE LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

The lighting circuits for each service area are similar, therefore one chart is provided, applicable to each circuit. Where identical components are involved, i.e., one in each circuit, the references to the associated components listed in Table 101 are given, e.g., 'Renew appropriate CB (2) to (7)'. Separate charts are provided for the refuelling panel floodlamp and the refuelling panel instrument lighting.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para.2.).
Set the GROUND LIGHTING switch to "ON".
Check that the service lamps in the following compartments are lit:

(a) Nose shell.
(b) Forward equipment bay.
(c) Nose landing gear bay.
(d) Equipment bay above nose landing gear bay.
(e) LH and RH sanitation points.
(f) LH and RH main landing gear bays.
(g) Rear equipment bay.

IF -

NOT OK —
1. One service lamp fails to light - change filament.
2. Service lamps in associated compartments not lit - Chart 101.

OK —

B. Open the refuelling panel access door and check that floodlamp is lit, and that instruments on panel are integrally lit.

NOT OK —
1. Flood lamp not lit - Chart 102.
2. One group of instruments not lit - renew Transformer (11).
3. No instruments lit - Chart 103.

SERVICE LAMPS IN ASSOCIATED COMPARTMENTS NOT LIT WHEN SWITCHED ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

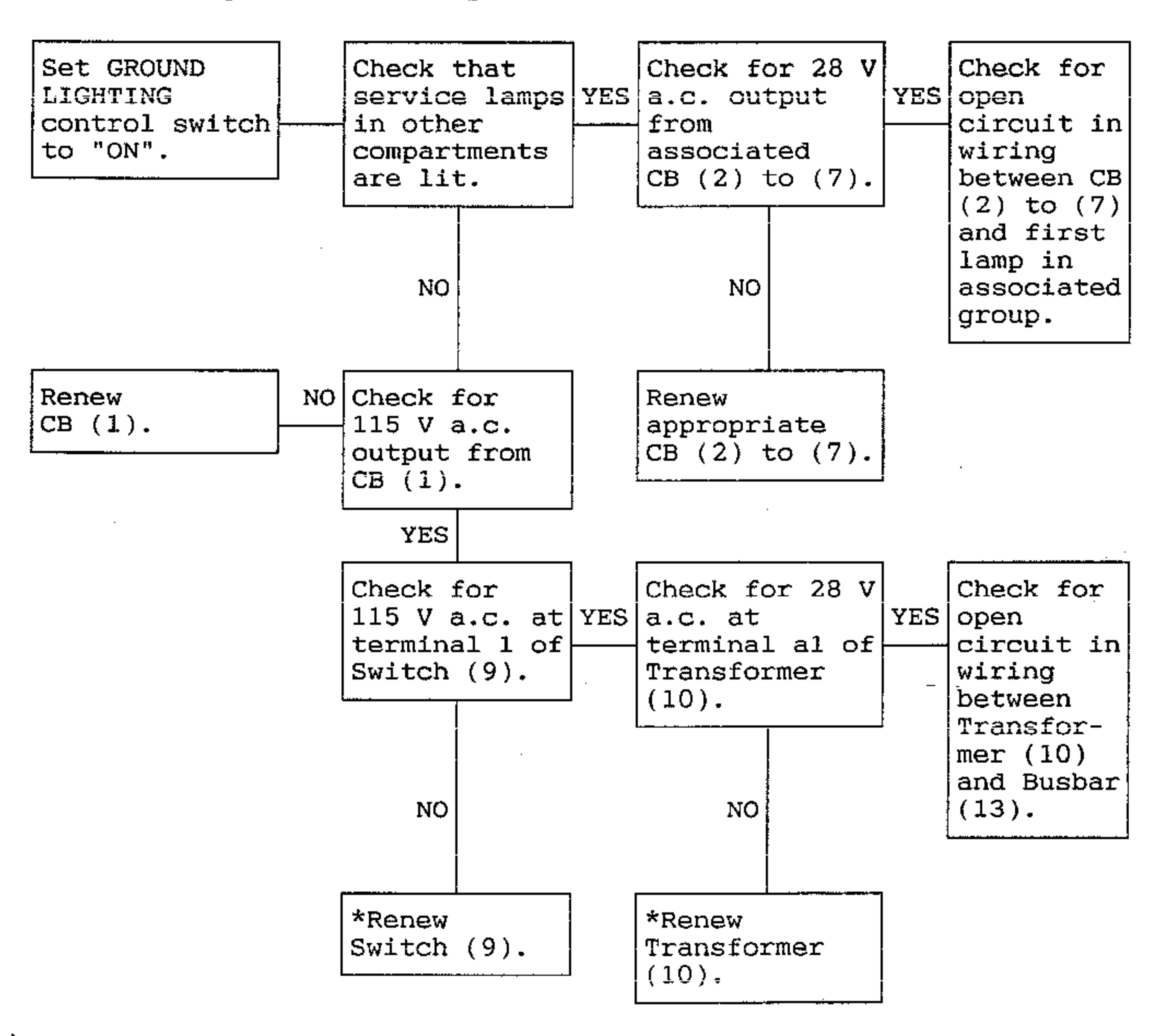


Chart 101

REFUELLING PANEL FLOODLAMP NOT LIT WHEN SWITCHED ON AND REFUELLING PANEL ACCESS DOOR OPEN.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

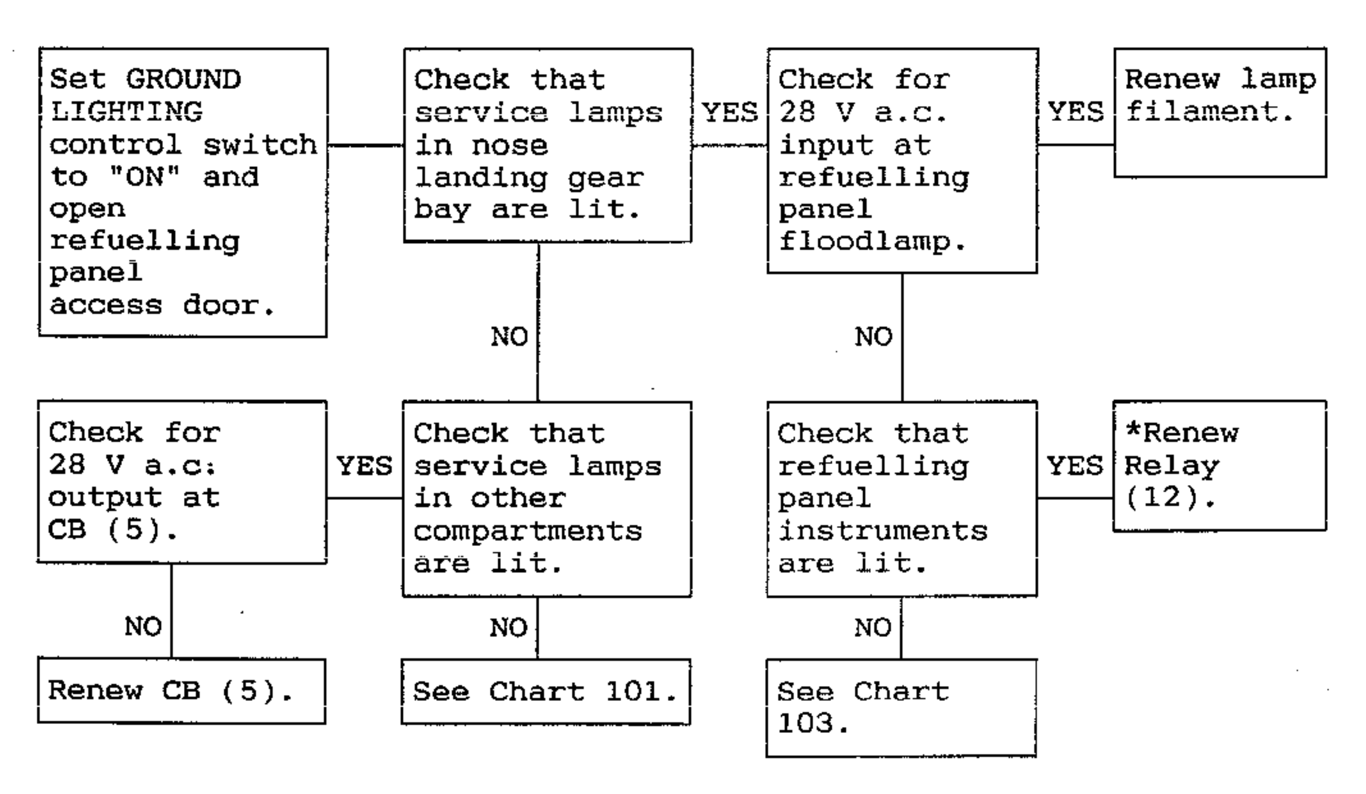


Chart 102

NO INSTRUMENTS ON THE REFUELLING PANEL LIT WHEN PANEL ACCESS DOOR OPEN.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

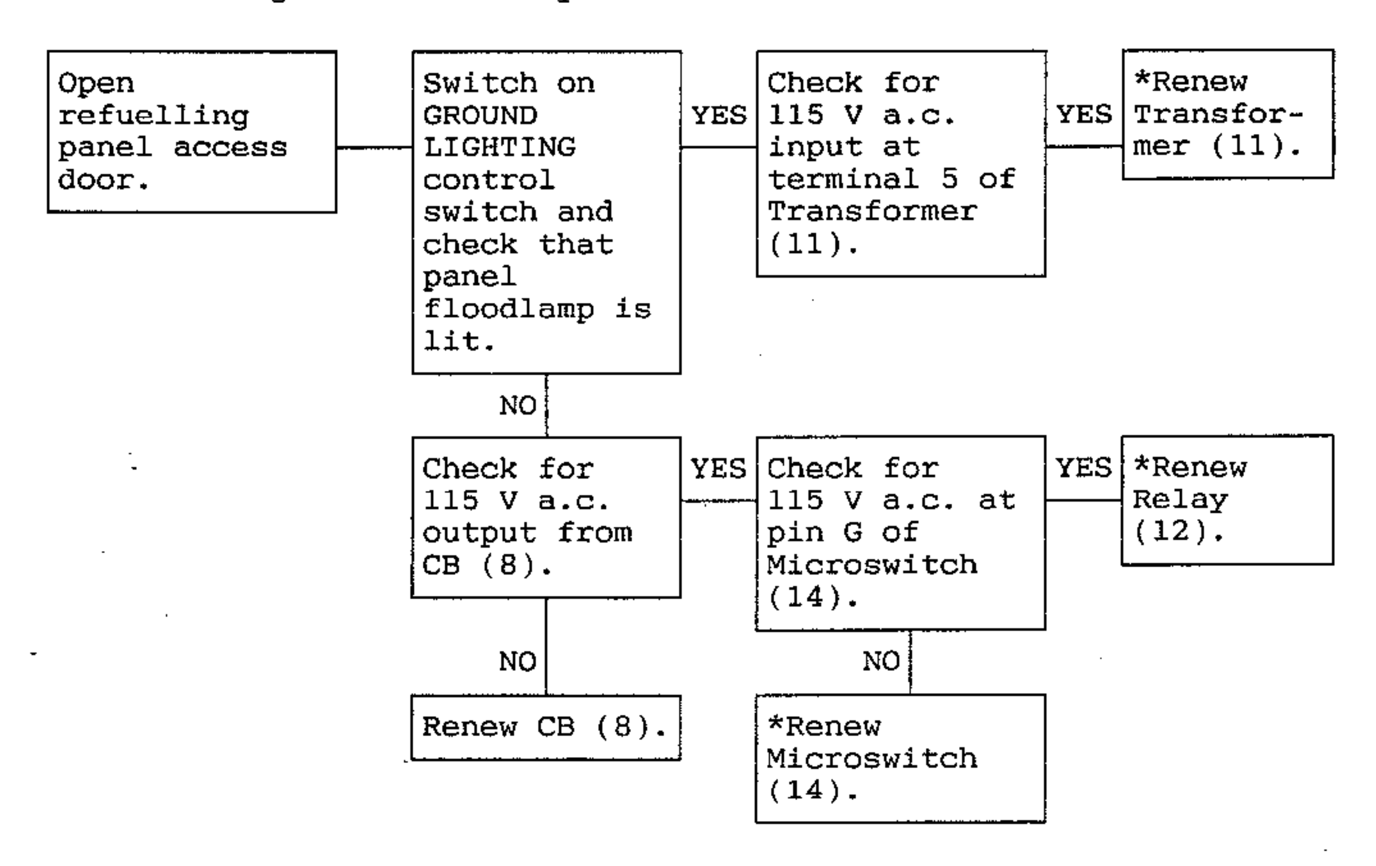


Chart 103

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
(1) Circuit breaker 115 V	-	25-216	X369	Map ref.B5	24-50-00 R/I	
(2) Circuit breaker 28 V	123 AB	10-123	L633	Forward underfloor racking	24-41-00 24-50-00 R/I	
(3) Circuit breaker 28 V	123 AB	10-123	L634	Forward underfloor racking	24-41-00 24-50-00 R/I	
(4) Circuit breaker 28 V	123 AB	10-123	L635	Forward underfloor racking	24-41-00 24-50-00 R/I	
(5) Circuit breaker 28 V	123 AB	10-123	L636	Forward underfloor racking	24-41-00 24-50-00 R/I	
(6) Circuit breaker 28 V	123 AB	10-123	L637	Forward underfloor racking	24-41-00 24-50-00 R/I	
(7) Circuit breaker 28 V	123 AB	10-123	L638	Forward underfloor racking	24-41-00 24-50-00 R/I	
(8) Circuit breaker 115 V	-	25-216	Q635	Map ref.B8	24-50-00 R/I	
(9) GROUND LIGHTING switch	-	20-215	X371	Flight compartment racking	24-41-00 R/I	
(10) Service lights 115/28 V transformer	123 AB	10-123	X372	Forward underfloor racking	24-41-12 R/I	
(11) Refuel panel integral lights transformer	-	132	L752	Forward baggage compartment	33-32-32 R/I	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
(12) Refuel panel light supply relay	123 AB	10-123	Q578	Forward underfloor racking		
(13) Ground service lights 28 V a.c. busbar	123 AB	10-123	31X	Forward underfloor racking	24-41-00 DO	
(14) Refuel panel door microswitch	-	194	Q548	Refuel panel access door	28-24-00 R/I	

Component Identification
Table 101

R

SERVICE LIGHTING - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic details the operations necessary for the replacement of service lamp filaments and for the removal and installation of service lamp assemblies.

Service lamps are located in the nose shell, forward and rear equipment bays, nose landing gear bay and refuelling panel, left and right landing gear bays, left and right sanitation points and the equipment bay above the nose landing gear bay. All service lamps are identical, and electrical connections are made at terminals on the base of the lamp which is bolted to the aircraft structure.

2. Service Lamp Filament

A. Prepare

(1) Ensure that the GROUND LIGHTING control switch on the oxygen panel 20-215 is at OFF.

B. Replace Filament

(1) Release the screws securing the lens protective cover to the base and remove both lens and cover.

(2) Remove the filament and fit a replacement.

(3) Position the lens and protective cover on the base and secure them with the screws.

C. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Select "ON" at the GROUND LIGHTING switch on the oxygen panel 20-215 and check that the lamp lights.

(3) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Service Lamp

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Set the GROUND LIGHTING control switch on the oxygen panel 20-215 to "OFF".

(2) Gain access to the service lighting circuit breakers on panel 10-123 by opening service compartment door 123 AB (Ref. 52-41-11).

(3) Trip the associated circuit breaker listed below and fit a safety clip.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF
Equipment bay (above nose well) and nose shell	10-123	L633	-
RH sanitation point RH landing gear bay	10-123	L634	-
Rear equipment bay	10-123	L635	-
Nose landing gear bay refuelling panel	10-123	L636	-
LH sanitation point LH landing gear bay	10-123	L637	-
Forward equipment bay	10-123	L638	-

C. Remove

(1) Release the two screws securing the lamp to the aircraft structure.

(2) Support the lamp and disconnect the electrical cables.

(3) Remove the lamp clear of the aircraft structure.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the lamp and connect the electrical cables to the terminals, ensuring that the connections are made in accordance with the cable identification and the applicable wiring diagram.

(3) Secure the lamp to the aircraft structure with the screws.

(4) Check that the lamp is bonded in accordance with 20-27-11.

E. Conclusion

(1) Remove the safety clip and reset the associated circuit breaker tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Set the GROUND LIGHTING control switch to "ON" and check that the service lamp lights. Set the control switch to "OFF".

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

(5) Close the service compartment door 123 AB (Ref. 52-41-11).

R

SERVICE LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic details the procedure for an Operational Test only. Functional and System Tests are not considered necessary in this application.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

NOTE: Ensure that the GROUND LIGHTING switch on the oxygen panel 20-215 is at ON.

B. Test

(1) Check that the service lamps in each compartment listed below are lit:

(a) Nose shell.

(b) Forward equipment bay.

(c) Nose landing gear bay.

(d) Equipment bay above nose landing gear bay.

(e) LH and RH sanitation points.

(f) LH and RH main landing gear bays.

(g) Rear equipment bay.

(2) Open the refuelling panel access door and check that the floodlamp is lit and that the instruments on the panel are integrally lit.

(3) Close the refuelling panel access door.

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

115/5.9 V TRANSFORMER - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

The 115/5.9 V transformer is supplied from the ground power 115 V a.c. busbar, when the refuel control panel access doors are open (Ref. 28-24-00), and provides a 5.9 V output to light the refuelling panel integral filaments.

The transformer is secured to a mounting bracket fitted on a vertical floor strut located behind the sidewall panels on the right side of the forward baggage compartment, close to the baggage compartment door. Four bolts and washers secure the transformer to its mounting bracket. Electrical connections are made at terminals fitted with nuts and washers, on top of the transformer case. The terminals are protected by a terminal cover attached to the transformer case by two screws.

2. 115/5.9 V Transformer

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the refuel control panel access door is closed.

(2) Trip the GROUND POWER REFUEL CONT & IND circuit breaker, Q635 on panel 25-216, map ref.B8, and fit a safety clip.

(3) Open the forward baggage compartment door.

(4) Gain access to the transformer by removing the baggage compartment sidewall panel VS (Ref. 25-52-00).

C. Remove

(1) Remove the transformer terminal cover and disconnect

the cables from the terminals.

(2) Refit the terminal cover.

(3) Support the transformer, remove the four securing bolts and washers at the base of the transformer and lift the transformer from its mounting.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the transformer on its mounting bracket and secure it with the four bolts and washers.

(3) Remove the terminal cover from the transformer.

(4) Connect the electrical cables to the transformer terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(5) Refit the terminal cover.

(6) Check that the transformer is bonded in accordance with 20-27-11.

E. Conclusion

(1) Remove the safety clip and reset the GROUND POWER REFUEL CONT & IND circuit breaker.

(2) Make available electrical ground power as detailed in 24-41-00.

(3) Open the refuel control panel access door and check that the instruments on the panel are integrally lit.

(4) Close the refuel control panel access door.

(5) Refit the baggage compartment sidewall panel VS (Ref. 25-52-00).

(6) Close the forward baggage compartment door.

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

NAVIGATION LIGHTS - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

The navigation lights show the position of the aircraft in flight and on the ground by means of lamp units, mounted one in the outer leading edge of each wing and one in the tail cone. The colour of each light identifies the left, right or rear part of the aircraft, and all three lights are controlled by a switch mounted on the flight compartment roof panel.

2. Wing Lamp Unit

Each wing lamp unit comprises a parallel beam light generator mounted inside the wings and perpendicular to the wing leading edge, a leading edge lens assembly and a 115/12 V step-down transformer, mounted close to the parallel beam light generator.

The parallel beam light generator comprises a 12 V 100 W quartz halogen filament in a sealed beam unit, mounted on a light-alloy optical guide that is polished internally and protected by a dust seal.

The leading edge lens assembly consists of a stainless steel receptacle containing a coloured glass optical system, red for the left wing and green for the right, elliptically shaped at one end and shaped to the wing leading edge profile at the other. The receptacle is secured to the wing leading edge upper and lower surfaces.

3. Tail Lamp Unit

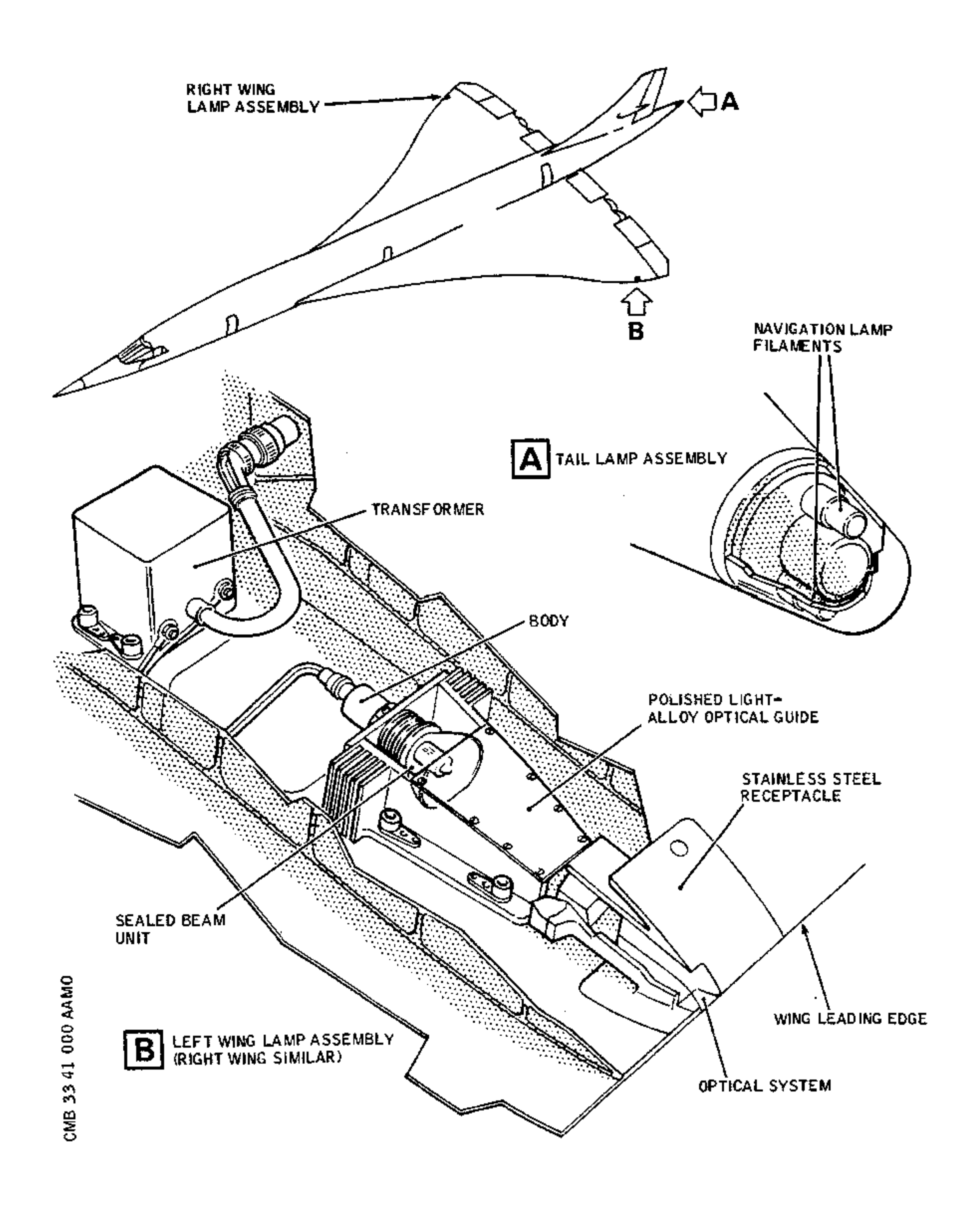
The tail lamp unit is a part of a navigation/anti-collision lamp assembly mounted in the tail cone. The navigation lamp comprises two 8.5 V 7.3 A filaments behind clear lenses and a 115/6.2 V step-down transformer.

4. Operation

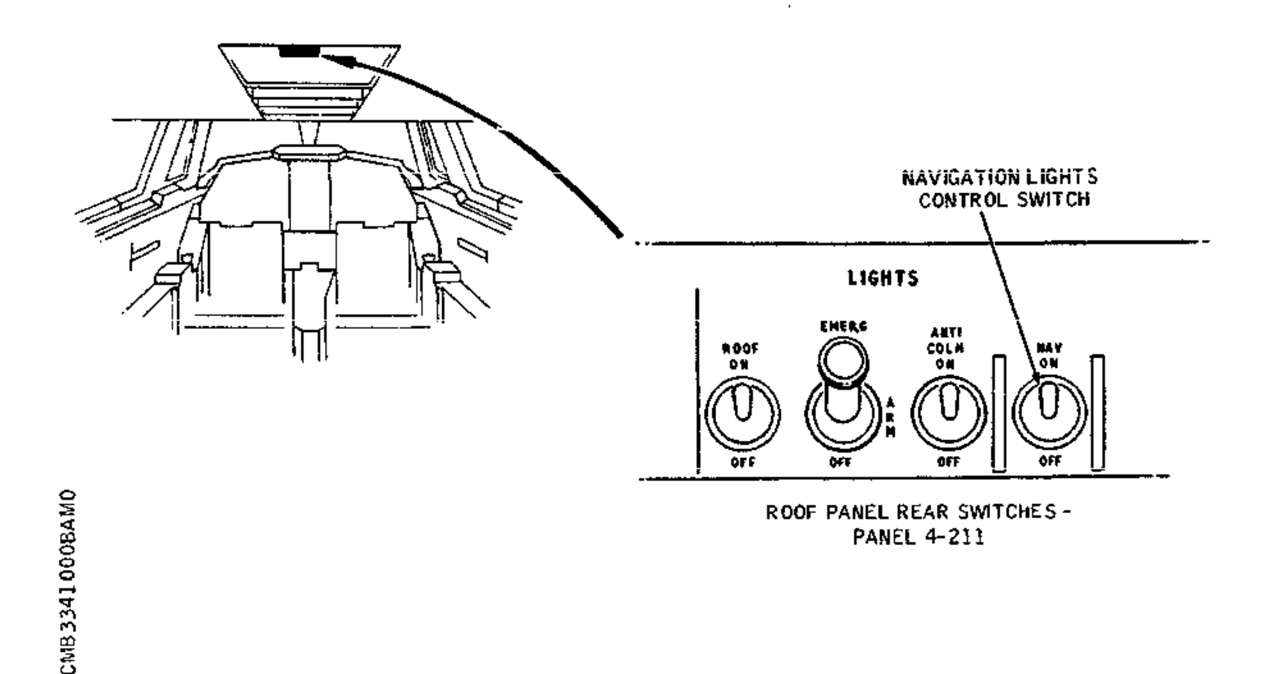
A. Control (Ref. Fig. 002)

The navigation lights are supplied from one phase of No.1 ground/flight 115 V a.c. busbar, and are controlled by the operation of a single-pole two-position toggle switch engraved NAV, ON - OFF, mounted on the rear of the flight compartment roof panel (panel 4-211).

B. Functional Description



Navigation Lamps
Figure 001



Navigation Lights - Control
Figure 002

When electrical supplies are available and ON is selected at the NAV lights control switch, the 115 V single-phase supply is connected to each wing lamp transformer, which provides a 12 V a.c. output to light the associated 100 W quartz halogen filament, and to the tail lamp transformer, which provides a 6.2 V a.c. output to light the two 7.3 A filaments in parallel. When OFF is selected at the NAV lights switch the 115 V supply is interrupted and all navigation lights are extinguished.

R

NAVIGATION LIGHTS - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the specified rectification action.

If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, and that electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

2. Preparation

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground power supply	-
Multimeter	-

B. Ensure that the associated circuit breaker is set (Ref. Table 101).

C. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para.2.). Set the NAV lights control switch on the flight compartment roof panel to "ON" and check that both wing navigation lamps and the twin navigation filaments in the tail navigation/anti-collision lamp are lit. IF -

NOT OK

1. Wing and tail navigation lamps not lit - check for 115 V a.c. output from CB (1). IF OK - renew Switch (2). IF NOT OK - renew CB (1).
2. One wing navigation lamp not lit - check for 115 V a.c. at the output terminals of Transformer (3) or (4). IF OK - renew sealed beam unit of associated Navigation Lamp (5) or (6). IF NOT OK - renew associated Transformer (3) or (4).
3. Wing lamps lit but both tail navigation lamp filaments not lit - check earth on pin B of tail navigation lamp free connector. IF NOT OK - check earth fault in wiring between pin B and earth point UN-313-9 on structure in zone 313. IF OK - check for 115 V a.c. at pin A of connector. If no voltage - locate and rectify open circuit in wiring between pin A and terminal block UG1310 in equipment bay, zone 151. If voltage present - renew Tail Navigation/Anti-collision Lamp (7).
4. If one filament in tail navigation lamp not lit - renew Tail Navigation/Anti-collision Lamp (7).

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
(1) Circuit breaker 115 V	-	14-215	L1	Map ref.D11	24-50-00 R/I	33-41-11
(2) Navigation lights control switch	-	4-211	L2	Flight compartment roof panel	33-00-00 R/I	33-41-11
(3) Navigation lamp (RH wing) transformer	-	614	L6	RH wing outer leading edge	33-41-21 R/I	33-41-11
(4) Navigation lamp (LH wing) transformer	-	514	L7	LH wing outer leading edge	33-41-21 R/I	33-41-11
(5) RH wing navigation lamp	-	614	L3	RH wing outer leading edge	33-41-21 R/I	33-41-11
(6) LH wing navigation lamp	-	514	L4	LH wing outer leading edge	33-41-21 R/I	33-41-11
(7) Tail navigation/ anti-collision lamp	-	313	L5	Tail cone	33-41-41 R/I	33-41-11

Component Identification
Table 101

R

NAVIGATION LIGHTS - REMOVAL/INSTALLATION

1. General

Instructions for the removal and installation of the navigation lights control switch, mounted on the rear switch panel of the flight compartment roof panel, are contained in 33-00-00.

R

NAVIGATION LIGHTS - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains an Operational Test which details the procedure for checking the operation of the navigation lights. Functional and System Tests are not considered necessary in this application.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test

(1) Set the NAV lights control switch on the flight compartment roof panel (panel 4-211) to "ON".

(2) Check that the three navigation lamps are lit as follows:

(a) Right wing outer leading edge, sealed beam unit - green.

(b) Left wing outer leading edge, sealed beam unit - red.

(c) Tail cone, twin filaments - white.

(3) Return the switch to "OFF" and check that the three navigation lights are extinguished.

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

R

NAVIGATION LIGHT ASSEMBLY (WINGS) - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

This topic contains instructions for the renewal of the sealed beam unit in a wing navigation lamp assembly, and for the removal and installation of the various navigation lamp assembly components.

The sealed beam unit forms an integral part of the lamp assembly and consists of a light generator, heat sink and mounting plate. The complete lamp assembly comprises the sealed beam unit, a 115/12 V step-down transformer, sealed beam unit support and optical guide, and a leading edge lens assembly.

The wing navigation lamp assemblies are mounted one in the outer leading edge of each wing. Access to the transformer, sealed beam unit, sealed beam unit support and optical guide is gained through a wing upper access panel. The lens assembly is secured to the wing by screws and forms part of the outer wing leading edge.

2. Sealed Beam Unit - Renewal

A. Equipment and Materials

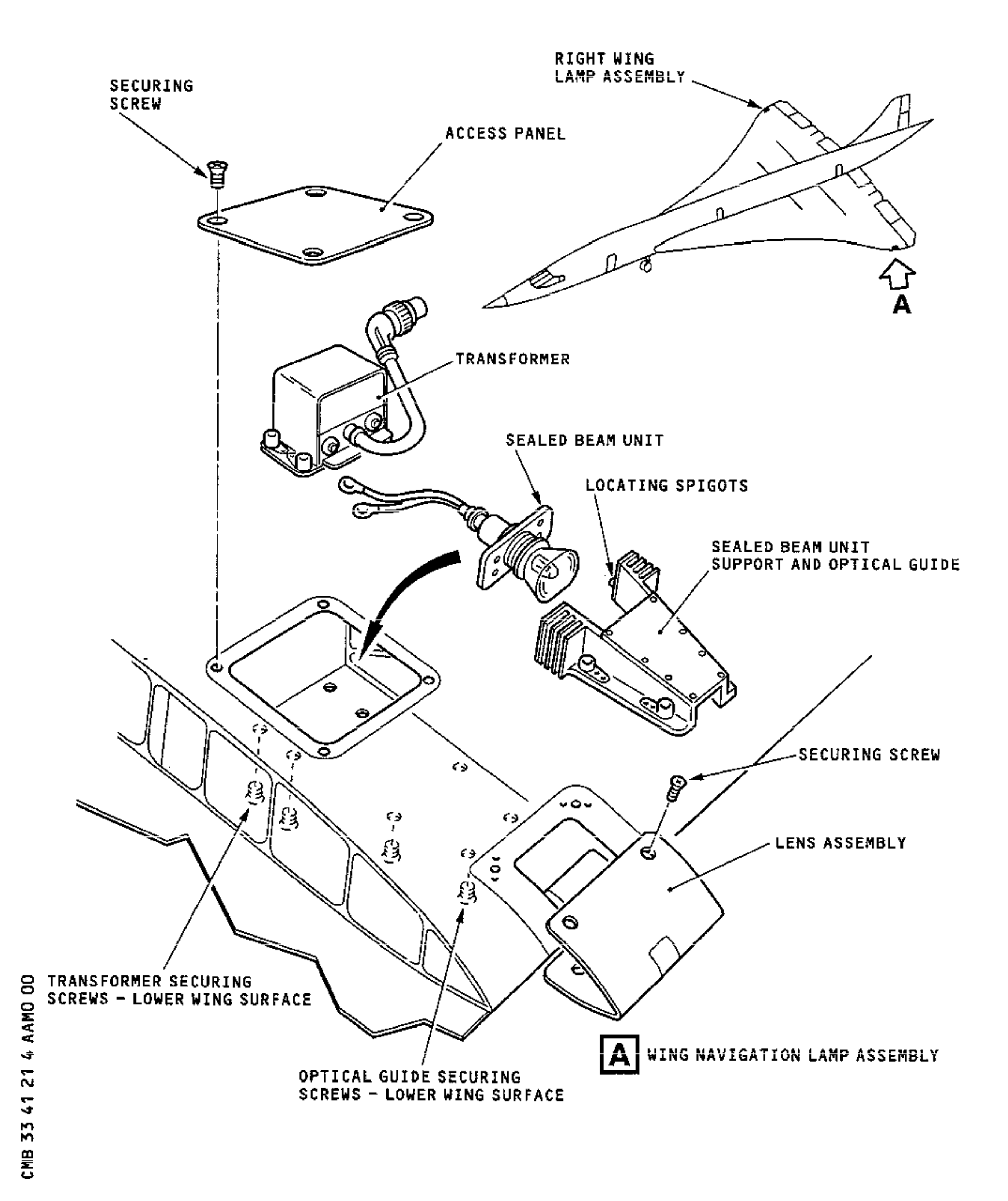
DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

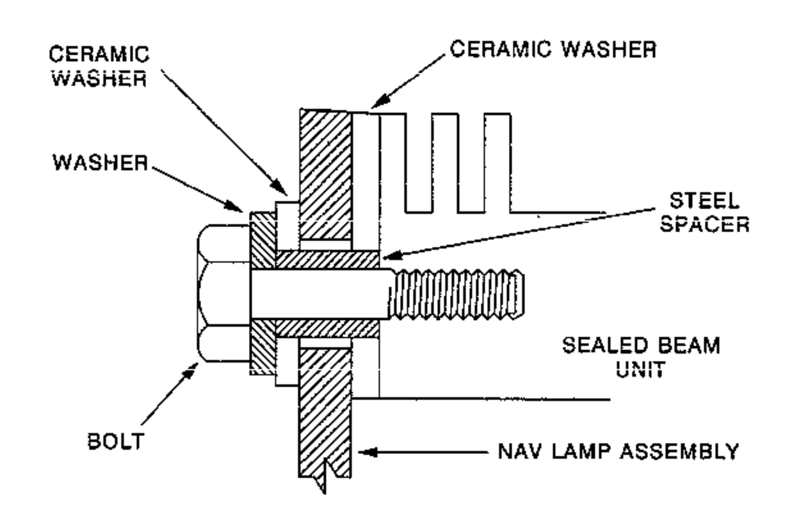
(1) Ensure that the NAV lights control switch on the flight compartment roof panel is at "OFF".

(2) Trip the NAV LTS SUP circuit breaker L1, on panel 14-215, map ref.D11, and fit a safety clip.

(3) Remove the screws securing the access panel to the top of the wing above the navigation lamp and remove the panel to gain access to the sealed beam unit.



Wing Navigation Lamp Assembly - Installation
Figure 401



WASHER
BOLT
STEEL SPACER
CLEARANCE BOLT HOLE
NAV LAMP ASSEMBLY
RECTANGULAR CERAMIC WASHER
SEALED BEAM UNIT
CERAMIC WASHER
LOCATING HOLE

CMB 33 41 21 4 ACM0 00

B

Wing Navigation Lamp Assembly
Figure 402

C. Renew

(1) Disconnect the electrical cables from the terminals on the transformer and release the cables from the cable clip.

(2) Release the fasteners securing the sealed beam unit mounting plate to its support, manipulate the unit to disengage the locating spigots from the mounting plate and withdraw the unit through the wing access opening.

(3) Fit a replacement sealed beam unit to its support inside the wing, ensuring that the locating spigots on the support engage the locating holes in the mounting plate. Secure the mounting plate to the support with the fasteners.

B NOTE: Modification 33D005 introduces a modified
B navigation lamp, ceramic gaskets and tubular
B spacers to produce a "sandwich" antivibration
B mounting. The modified lamp has enlarged bolt
B holes through which a spacer passes providing
B the load path upon which the bolts tighten.
B Two ceramic gaskets sandwiched around the
B navigation lamp provide the antivibration
B mounting whilst still providing a heat path.

B The prearation, renewal and conclusion tasks for
B the sealed beam unit are identical for the
B modified navigation lamp, except that the
B ceramic gaskets and spacers should be assembled
RB in accordance with Fig. 402.

(4) Connect the electrical cables to the transformer terminals and secure the cables with the cable clip.

D. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the circuit breaker tripped before renewal.

(3) Set the NAV lights control switch to "ON" and check that the navigation lamp is lit. Return the switch to "OFF".

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Navigation Light Transformer - Removal/Installation

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the NAV lights control switch on the flight compartment roof panel is at "OFF".

(2) Trip the NAV LTS SUP circuit breaker L1, on panel 14-215, map ref.D11, and fit a safety clip.

(3) Remove the screws securing the access panel to the top of the wing above the navigation lamp and remove the panel to gain access to the transformer.

C. Remove

(1) Disconnect the electrical cables from the transformer terminals.

(2) Disconnect the transformer electrical connector.

(3) Disconnect the earth connector from its fixing point on the wing structure.

(4) From the bottom side of the wing, remove the screws securing the transformer to its mounting inside the wing and withdraw the transformer through the access opening.

D. Install

(1) Comply with the electrical safety precautions.

(2) Position the transformer on its mounting inside the wing and, from the bottom side of the wing, secure the transformer to the mounting with the screws.

(3) Connect the electrical cables to the transformer terminals.

(4) Connect the transformer electrical connector, ensuring that the mating surfaces are clean and undamaged.

(5) Connect the earth connector to its fixing point on the wing structure.

(6) Check that the transformer is bonded in accordance with 20-27-11.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the circuit breaker tripped before removal.

(3) Set the NAV lights control switch to "ON" and check that the navigation lamp is lit. Return the switch to "OFF".

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

(5) Refit the access panel to the wing and secure it with the screws.

4. Sealed Beam Unit Support and Optical Guide - Removal/Installation

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the NAV lights control switch on the flight compartment roof panel is at "OFF".

(2) Trip the NAV LTS SUP circuit breaker L1, on panel 4-215, map ref.D11, and fit a safety clip.

(3) Remove the screws securing the access panel to the top of the wing above the navigation lamp and remove the panel to gain access to the sealed beam unit support and optical guide.

(4) Remove the sealed beam unit (Ref. para.2.).

C. Remove

(1) From the bottom side of the wing, remove the screws securing the sealed beam unit support and optical guide to its mounting inside the wing.

(2) Lift the unit from its mounting and manipulate it to withdraw it through the wing access opening.

D. Install

(1) Comply with the electrical safety precautions.

(2) Position the sealed beam unit support and optical guide on its mounting inside the wing and, from the bottom side of the wing, secure the unit to its mounting with the screws.

E. Conclusion

(1) Refit the sealed beam unit to the lamp assembly (Ref. para.2.).

5. Leading Edge Lens Assembly - Removal/Installation

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the NAV lights control switch on the flight compartment roof panel is at "OFF".

(2) Trip the NAV LTS SUP circuit breaker L1, on panel 14-215, map ref.D11, and fit a safety clip.

C. Remove

(1) Remove the screws securing the lens assembly to the upper and lower surfaces of the outer wing leading edge.

(2) Withdraw the complete lens assembly from the wing.

D. Install

(1) Comply with the electrical safety precautions.

(2) Orientate the lens assembly so that the face marked LOWER SKIN is facing downward.

(3) Fit the lens assembly to its mounting on the outer wing leading edge and secure it to the wing upper and lower surfaces with the screws.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the circuit breaker tripped before removal.

(3) Set the NAV lights control switch to "ON" and check that the navigation lamp is lit, right wing lamp - green, or left wing lamp - red, as appropriate. Return the switch to "OFF".

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

NAVIGATION/ANTI-COLLISION LIGHT ASSEMBLY (TAIL) - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

ENSURE THAT POWER TO THE ANTI-COLLISION LAMP UNIT IS SWITCHED OFF 5 min BEFORE REMOVING THE ELECTRICAL CONNECTOR. 650 V IS PRESENT AT THE CONNECTOR DURING OPERATION AND THE POWER SUPPLY RETAINS THIS CHARGE FOR APPROXIMATELY 5 min AFTER OPERATION IS DISCONTINUED.

1. General (Ref. Fig. 401)

This topic contains instructions for the removal and installation of the tail navigation/anti-collision lamp assembly, which comprises a navigation lamp unit and an anti-collision lamp unit, both mounted on a lamp support located in the tail cone behind a clear domed lens.

The navigation lamp unit incorporates two 6 V quartz lamps, and a step-down transformer which is mounted on the reverse side of the lamp support. A flashtube, trigger coil and reflector form the anti-collision lamp unit, which is contained in a lamp housing fitted with a red lens mounted on the lamp support between the two navigation lamps.

A fault in any one of the navigation lamp or anti-collision lamp unit parts necessitates the complete renewal of the tail navigation/anti-collision lamp assembly.

Electrical connection to both lamp units is made through electrical connectors on the reverse side of the lamp support.

2. Navigation/Anti-collision Lamp Assembly (Tail)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-
Torque spanner, 40 to 45 lbf in (0.452 to 0.508 mdaN)	-
Sealant (Ref. 20-30-00,	RTV 730

DESCRIPTION	PART NO.
No.360)	
Primer (Ref. 20-30-00, No.367), for RTV 730 sealant	Dow Corning 1200 Clear
R B Gasket	Grimes 31-4120-1
R B Solvent (Ref. 20-30-00, No.473)	BAC M302

B. Prepare

(1) Ensure that the NAV and ANTI COLN light control switches on the flight compartment roof panel are at OFF.

(2) Trip the NAV LTS SUP circuit breaker L1, on panel 14-215, map ref.D11, and the ANTI COLLISION LTS SUP circuit breaker L8, on panel 14-216, map ref.A10, and fit safety clips.

C. Remove

(1) Remove the bolts securing the collar of the domed lens assembly to the end of the tail cone and withdraw the domed lens assembly from the mounting.

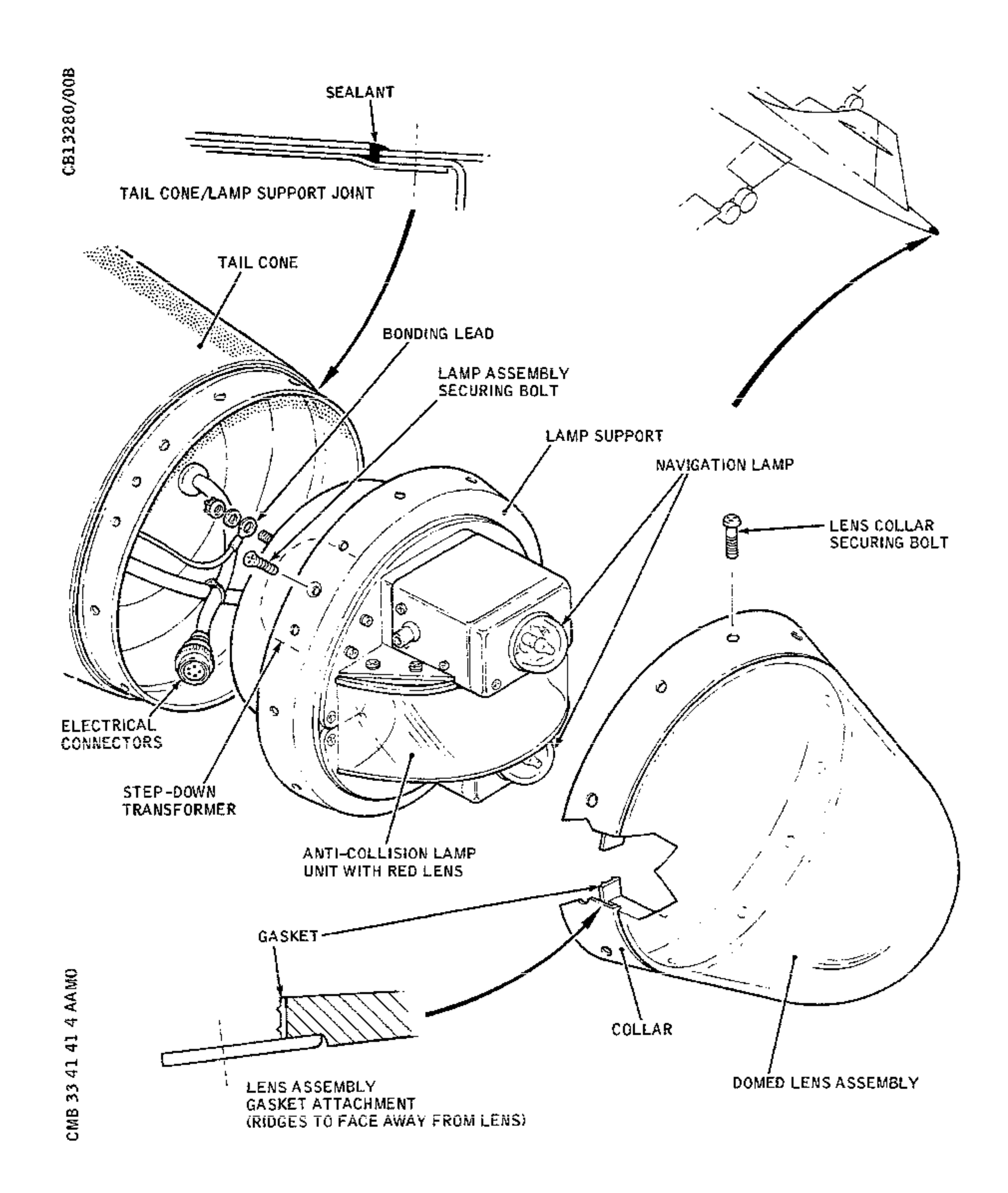
(2) Remove the bolts securing the lamp support to the aircraft structure, and withdraw the lamp assembly from the tail cone sufficiently to gain access to the electrical connectors and bonding lead.

(3) Disconnect the electrical connectors and bonding lead from the lamp assembly and remove the lamp.

(4) If the domed lens assembly is to be refitted, proceed as follows:-

(a) Remove and discard the gasket from the domed lens assembly.

(b) Using solvent BAC M302, clean old sealant from the domed lens and lamp assembly/tail cone joint; allow solvent to dry.



Tail Navigation/Anti-collision
Lamp Assembly - Installation
Figure 401

D. Prepare to Install

CAUTION: A NEW GASKET MUST BE FITTED TO THE DOMED LENS ASSEMBLY BEFORE INSTALLATION.

NOTE: Primer and sealant manufacturer's instructions must be followed.

(1) If the domed lens assembly, previously removed, is being refitted, seal a new gasket to the lens, as follows:

B (a) Prime mating surfaces with primer.

(b) Seal the gasket to the lens, with the gasket ridges facing away from the lens, using sealant
B RTV 730.

(2) Ensure that the mating surfaces of the lamp support and tail cone are clean and free from grease, in order to provide a good electrical bonding contact.

RB (3) Check the anchor stiff nuts and bolts used to secure
RB the lamp assembly and the domed lens to the tail cone.
RB Anchor nuts with inadequate friction and worn bolts
RB must be replaced.

E. Install

(1) Comply with the electrical safety precautions.

(2) Support the tail navigation/anti-collision lamp assembly and connect the electrical connectors, ensuring that the mating surfaces are clean and undamaged.

(3) Connect the bonding lead to the stud on the lamp assembly with the washer and nut; torque-tighten the nut to between 29 and 32 lbf in (0.328 and 0.362 mdaN).

(4) Fit the lamp support to its mounting on the rear of the tail cone and secure it with the bolts. Torque-tighten the bolts to between 40 and 45 lbf in (0.452 and 0.508 mdaN).

(5) Check that the lamp assembly is electrically bonded in accordance with 20-27-11.

(6) Place the domed lens assembly on its mounting at the rear of the tail cone and secure it with the bolts.

Torque-tighten the bolts to between 40 and 45 lbf in (0.452 and 0.508 mdaN).

(7) Prime the lamp support/tail cone joint with primer Dow Corning 1200 Clear.



(8) Seal the lamp support/tail cone joint with sealant
B RTV 730. Apply and cure as defined in 20-22-13.

R F. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00, Servicing.

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) Set the NAV lights control switch to "ON" and check that the navigation lights are lit. Return the switch to "OFF".

(4) Set the ANTI COLN light control switch to "ON" and check that the anti-collision lamp shows a red light flashing at a rate of 40 to 100 flashes per minute. Return the switch to "OFF".

(5) Switch off and disconnect electrical ground power as
R detailed in 24-41-00, Servicing.

NAVIGATION/ANTI-COLLISION LIGHT ASSEMBLY (TAIL)
INSPECTION/CHECK

1. INSPECTION/CHECK

A. Inspect the glass dome for security, cracks and cleanliness.

B. Check that the torque - loading on the 12 lens collar securing bolts, is between 40 and 45 lbf in (0.452 and 0.508 mdaN).

C. If any of the lens securing bolts is found to be loose, check all the bolts and anchor nuts used to secure the lens and lamp assemblies. Anchor nuts with inadequate friction and worn bolts must be replaced.

ANTI-COLLISION LIGHTS - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

Anti-collision lights show the position of the aircraft by means of a flashtube mounted in the leading edge of each wing and in the tail cone. The lights flash simultaneously at a rate between 40 and 100 flashes per minute.

The three flashtubes, each with an associated power unit, are governed by a flasher unit which is controlled by a switch mounted on the flight compartment roof panel. The flasher unit is located in the forward underfloor racking, and each flashtube power unit is mounted close to its associated flashtube in the wings and in the tail cone.

2. Flasher Unit

The flasher unit is housed in a case mounted in the forward underfloor racking (panel 5-123). Electrical connections are made at a connector on the rear of the case.

The flasher unit comprises a timing circuit which supplies 115 V 400 Hz a.c. pulsed outputs of approximately 60 pulses
R per minute to each of the flashtube power units.

3. Power Unit

Each flashtube power unit is enclosed in a cover assembly and located close to its associated flashtube. Electrical connections are made at two connectors on the rear of the cover.

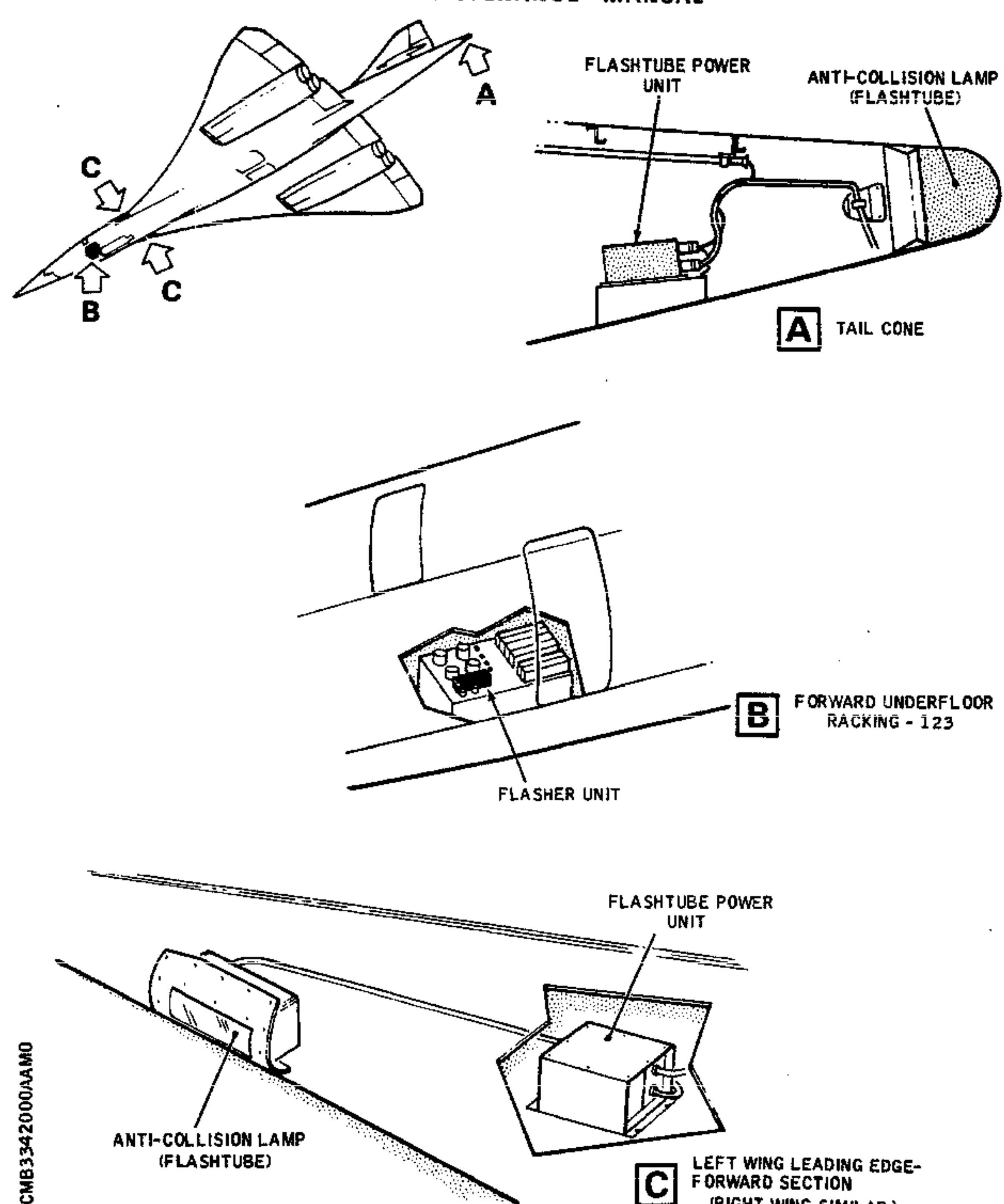
The power unit comprises three sections: a converter, a timer and an energy storage and firing circuit.

The converter section changes the 115 V a.c. pulsed input into 650 V d.c. which charges a capacitor bank in the energy storage and firing circuit.

The timer generates a trigger pulse which is adjustable to provide 60(±10) pulses per minute. These pulses are fed to the energy storage and firing circuit to provide the power surges that fire the flashtube.

4. Flashtube Lamp Assembly

Each flashtube is contained within an anti-collision lamp assembly mounted in the leading edge of each wing, and in the tail navigation lamp assembly. Electrical connections are made at a connector in the rear of each lamp housing.



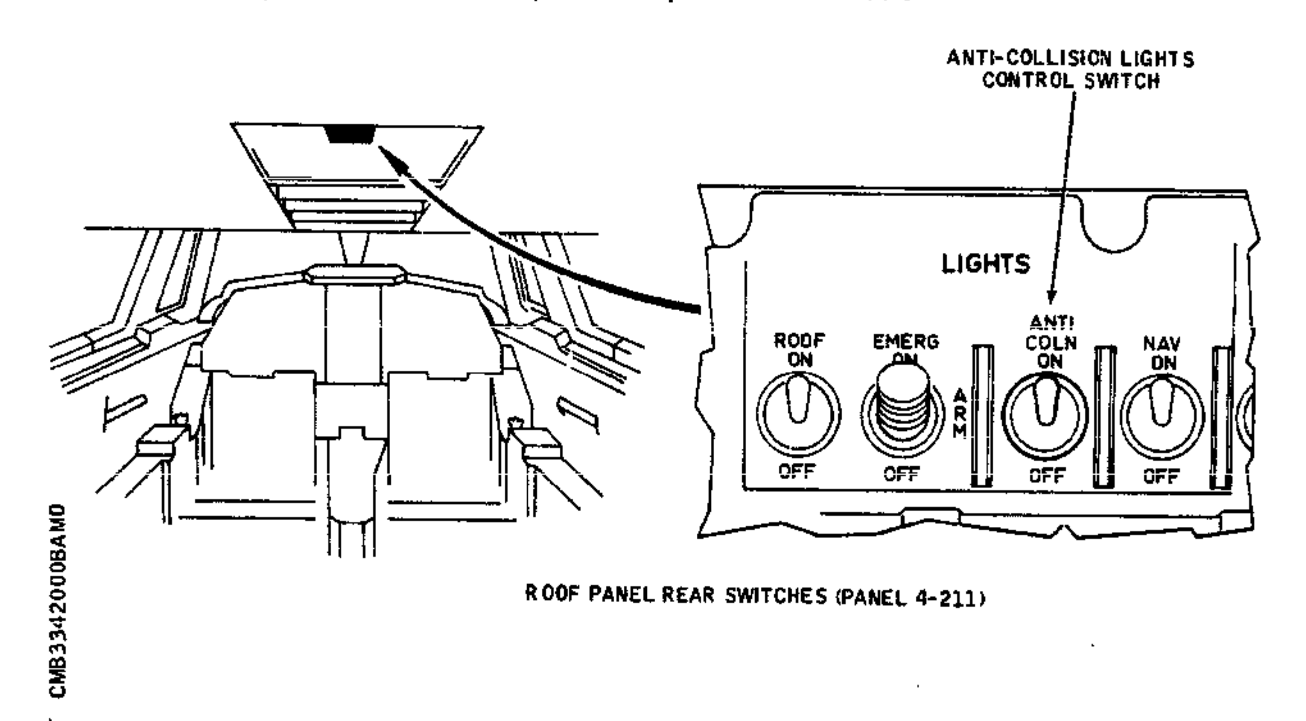
Anti-collision Lights and Equipment
Figure 001

The anti-collision lamp assembly comprises a flashtube, a trigger coil and a reflector, contained within a lamp housing fitted with a red, heat-resistant glass lens. There are no moving parts in the assembly, and the lamp operates only in conjunction with the flasher unit and the flashtube power unit.

5. Operation

A. Control (Ref. Fig. 002)

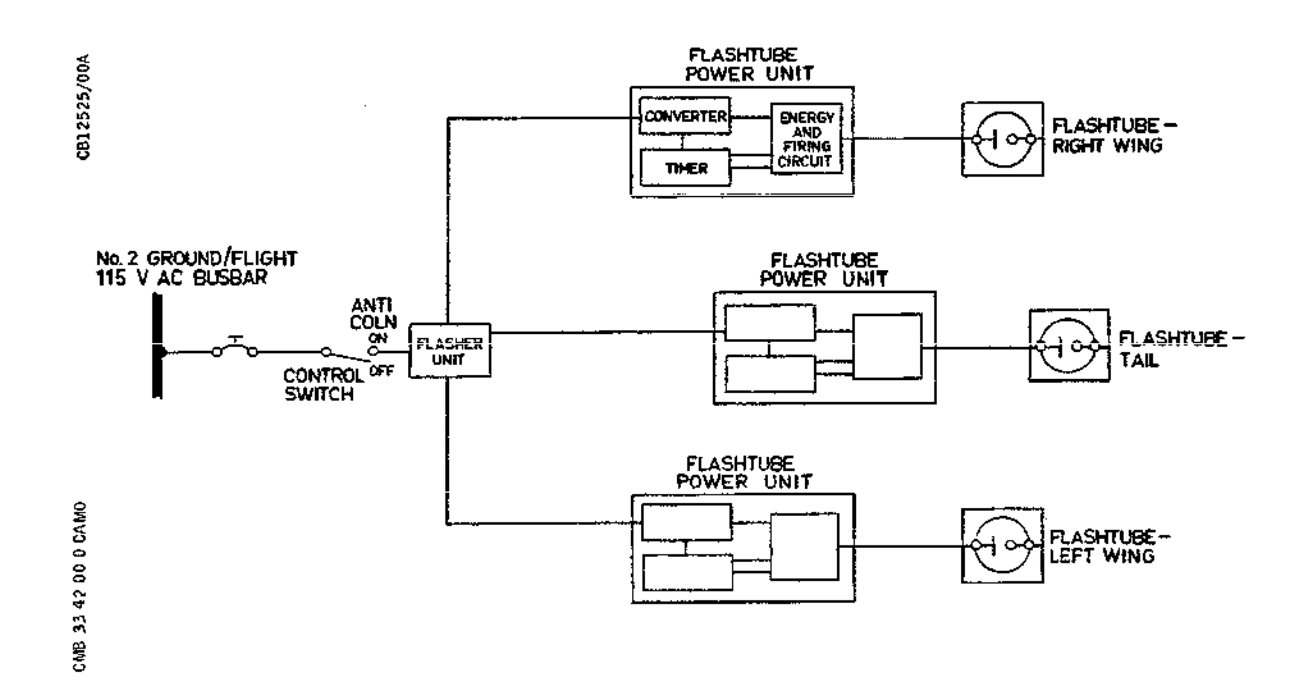
The anti-collision lights are supplied from one phase of No.2 ground/flight 115 V a.c. busbar through the common flasher unit. The lights are manually controlled by a single-pole two-position (ON-OFF) toggle switch engraved ANTI COLN, mounted on the rear of the flight compartment roof panel (panel 4-211).



Anti-collision Lights - Control
Figure 002

B. Functional Description (Ref. Fig. 003)

When electrical supplies are available and ON is



Anti-collision Lights -
Simplified Schematic
R Figure 003

selected at the ANTI COLN control switch, the 115 V a.c. single-phase supply is connected directly to the flasher unit.

The flasher unit provides a pulsed output of 115 V 400 Hz a.c. to each flashtube power unit.

The converter section of the power unit transforms and rectifies the 115 V a.c. input and provides a 650 V d.c. output which charges the capacitors in the energy storage and firing circuit. The 650 V d.c. supply is also applied directly across the flashtube and retains the gas in the tube near ionization.

The power unit timer receives a sample of the a.c. input, before conversion, and generates a signal pulse,
R approximately once per second, which triggers the firing circuit. The firing circuit then applies a charge across the trigger coil, which ionizes the gas in the flashtube, permitting the capacitors in the energy storage unit to discharge through the tube, causing a

bright flash.

When the gas in the tube de-ionizes and the firing circuit shuts off, the capacitor bank starts to recharge.

ANTI-COLLISION LIGHTS - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

```
A.*****************************************
  *Prepare to trouble shoot (Ref. para.2.).*
  *Set the ANTI COLN light control switch  *
  *on the flight compartment roof panel    *
  *to "ON".  Check that the anti-collision *
  *lamps flash in unison at a rate of      *
  *between 40 and 100 flashes per minute.  *
  *****************************************
                 |
                 |                ------------------------------
                 |               |1. No anti-collision lights - |
                 NOT OK----------|   Chart 101.                 |
                                 |2. One anti-collision lamp not|
                                 |   flashing - Chart 102.      |
                                 |3. All anti-collision lamps   |
                                 |   flashing outside the rate of|
                                 |   40 to 100 flashes per minute|
                                 |   - renew Flasher Unit (3).  |
                                  ------------------------------
```

NO ANTI-COLLISION LIGHTS WHEN 'ANTI COLN' LIGHT SWITCH AT 'ON'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

1. Set ANTI COLN light switch to "ON".
2. Check for 115 V a.c. output from CB (1).
   - NO: Renew CB (1).
   - YES: go to next step.
3. Check for 115 V input at terminal 2 of Switch (2).
   - NO: Locate and rectify O/C in wiring between CB (1) and Switch (2).
   - YES: go to next step.
4. Check for 115 V output at terminal 1 of Switch (2).
   - NO: Renew Switch (2).
   - YES: go to next step.
5. Check earth input at pin E of Flasher Unit (3).
   - NO: Locate and rectify wiring earth fault.
   - YES: *Renew Flasher Unit (3).

Chart 101

ONE ANTI-COLLISION LIGHT NOT FLASHING WHEN 'ANTI COLN' LIGHT SWITCH AT 'ON'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

NOTE: Before renewal of components (*), check the preceding run of wiring for continuity.

R
R Set ANTI COLN light switch to "ON". ---- Probability of faulty flashtube - Renew
R appropriate wing Anti-collision lamp (7)
R or (8), or tail Anti-collision Lamp (9).
R Is fault cleared?

R NOTE: If two anti-collision lamps are not
R flashing and the remaining lamp is
R flashing at half the normal rate, there
R is a probability of two faulty
R flashtubes.

NO

Check earth input on connector A, pin C, of associated Power Unit (4), (5) or (6). -YES- *Renew Power Unit (4), (5) or (6).

NO

Locate and rectify O/C in wiring between power unit and earth connection.

Chart 102

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
(1) Circuit breaker 115 V	-	14-216	L8	Map ref.A10	24-50-00 R/I	33-42-11
(2) Anti-collision light control switch	-	4-211	L9	Roof panel	33-00-00 R/I	33-42-11
(3) Flasher unit	123AB	5-123	L10	Fwd. underfloor racking	33-42-13 R/I	33-42-11
(4) RH wing lamp power unit	-	611	L11	RH wing	33-42-12 R/I	33-42-11
(5) LH wing lamp power unit	-	511	L13	LH wing	33-42-12 R/I	33-42-11
(6) Tail lamp power unit	-	313	L12	Tail	33-42-12 R/I	33-42-11
(7) RH wing anti-collision lamp	-	611	L14	RH wing	33-42-11 R/I	33-42-11
(8) LH wing anti-collision lamp	-	511	L15	LH wing	33-42-11 R/I	33-42-11
(9) Tail anti-collision lamp	-	313	L5	Tail cone	33-41-41 R/I	33-42-11

Component Identification
Table 101

ANTI-COLLISION LIGHTS - REMOVAL/INSTALLATION

1. General

Instructions for the removal and installation of the anti-collision lights control switch, mounted on the rear switch panel of the flight compartment roof panel, are contained in 33-00-00.

Printed in England

ANTI-COLLISION LIGHTS - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Anti-collision lights tests are contained under two headings: Operational Test and Functional Test. A System Test is not considered necessary in this application. The Operational Test details the procedure for checking the operation of the anti-collision lights. The Functional Test checks the anti-collision lights in more detail to prove that the flasher unit is electrically and functionally correct.

2. Operational Test

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test

(1) Set the ANTI COLN light control switch on the flight compartment roof panel (panel 4-211) to "ON".

(2) Check that the anti-collision lamps at the right and left wing forward leading edge, and at the tail cone, show a flashing red light.

(3) Return the switch to "OFF" and check that the anti-collision lights are extinguished.

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Stop watch	-

B. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

C. Test

(1) Set the ANTI COLN light control switch on the flight compartment roof panel (panel 4-211) to "ON".

(2) Check that the anti-collision lamps at the right and left wing forward leading edge, and at the tail cone, show a flashing red light.

(3) Check that the lights flash in unison at a rate of between 40 and 100 flashes per minute.

(4) Return the switch to "OFF" and check that the anti-collision lights are extinguished.

D. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

ANTI-COLLISION LIGHT ASSEMBLY (WINGS) - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

ENSURE THAT POWER TO THE ANTI-COLLISION LAMPS IS SWITCHED OFF 5 min BEFORE A LAMP IS REMOVED FROM ITS MOUNTING. 650 V IS PRESENT AT THE LAMP TERMINALS DURING OPERATION AND THE POWER SUPPLY RETAINS THIS CHARGE FOR APPROXIMATELY 5 min AFTER OPERATION IS DISCONTINUED.

1. General

Two anti-collision lamps are mounted in the wings, one in the forward section of the left wing leading edge, and the other in the forward section of the right wing leading edge. Each lamp unit is secured in a leading edge fairing by countersunk bolts through the lens assembly. Electrical connections are made at a connector at the back of each lamp housing.

The removal and installation procedures apply to both the left and right wing anti-collision lamp installations.

2. Anti-collision Lamp

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the ANTI COLN light control switch on the flight compartment roof panel is at OFF.

(2) Trip the ANTI-COLLISION LTS SUP circuit breaker L8, on panel 14-216, map ref.A10, and fit a safety clip.

C. Remove

(1) Allow a time delay of 5 min from the time that power is switched off at the anti-collision light control switch.

(2) Remove the bolts securing the anti-collision lamp to the wing leading edge fairing.

(3) Withdraw the lamp from the fairing sufficiently to gain access to the electrical connector at the back of the lamp housing.

(4) Disconnect the electrical connector from the lamp and remove the lamp clear of the wing.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the anti-collision lamp close to its mounting position in the wing leading edge fairing. Connect the electrical connector to the lamp, ensuring that the mating surfaces are clean and undamaged.

(3) Insert the lamp into its aperture in the wing leading edge fairing and secure it with the bolts.

E. Conclusion

R (1) Remove the safety clip and reset the ANTI-COLLISION
R LTS SUP circuit breaker.

(2) Carry out an Operational Test of the anti-collision lights (Ref. 33-42-00).

ANTI-COLLISION LIGHT POWER UNIT - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

ENSURE THAT POWER TO THE POWER UNITS IS SWITCHED OFF 5 min BEFORE REMOVING THE ELECTRICAL CONNECTORS. 650 V IS PRESENT AT THE POWER UNIT ENERGY STORAGE CIRCUIT WHICH IS RETAINED FOR 5 min, APPROXIMATELY, AFTER OPERATION IS DISCONTINUED.

1. General

This topic contains instructions for the removal and installation of three anti-collision light power units, each power unit being mounted close to its associated anti-collision lamp in the forward section of each wing leading edge and in the tail cone.

Electrical connections are made at two connectors on the side of each power unit, and an earth connection is made to a power unit mounting bolt.

2. Anti-collision Light Power Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-
Torque spanner, 32 lbf in (0.362 mdaN)	-

B. Prepare

R (1) To remove a wing power unit, proceed as follows:-

R (a) Ensure that the ANTI COLN light control switch
R on the flight compartment roof panel is at OFF.

R (b) Trip the ANTI-COLLISION LTS SUP circuit breaker
R L8 on panel 14-216, map ref.A10, and fit a
R safety clip.

R (2) To remove a tail cone power unit, proceed as follows:-

R (a) Ensure that the tail gear is lowered.

(b) Ensure that the ANTI COLN light control switch on the flight compartment roof panel is at OFF.

(c) Trip the following circuit breakers and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
ANTI-COLLISION LTS SUP	14-216	L8	A10
UC LOWER DOORS OPEN SUP	15-215	G3	A8
UC RAISE DOORS CLOSE SUP	15-215	G1	A6
UC POSN IND	1-213	G51	N16

(d) Fit a locking sleeve to the tail gear jack (Ref. 12-37-00, Tail Gear Wheel).

C. Remove Wing Anti-collision Light Power Unit

(1) Allow a time delay of 5 min from the time that power is switched off at the ANTI COLN light control switch.

(2) Remove the bolts securing the forward section of the wing leading edge detachable fairing. Withdraw and support the fairing at the extent of the electrical cables.

(3) Remove the nuts and washers securing the power unit mounting plate to the mounting brackets, and withdraw the power unit sufficiently to gain access to the electrical connectors.

(4) Disconnect the electrical connectors from the power unit. Disconnect the metal braid from the bonding stud on the power unit.

(5) Remove the power unit from the wing.

D. Install Wing Anti-collision Light Power Unit

(1) Comply with the electrical safety precautions.

(2) Place the power unit on its mounting and connect the two electrical connectors to the power unit, ensuring that the mating surfaces are clean and undamaged.

(3) Connect the metal braid to the bonding stud on the power unit with the nut and washers. Torque-tighten the nut to 32 lbf in (0.362 mdaN).

(4) Secure the power unit to its mounting brackets with the nuts and washers.

(4) Check that the power unit is bonded in accordance with 20-27-11.

(5) Refit the fairing to the wing.

E. Remove Tail Cone Anti-collision Light Power Unit

(1) Allow a time delay of 5 min from the time that power is switched off at the ANTI COLN light control switch.

R (2) Gain access to the anti-collision light power unit
R via the tail gear doors.

(3) Disconnect the electrical connectors from the power
R unit. Disconnect the metal braid and the bonding lead (if fitted) from the bonding stud on the power unit.

(4) Remove the nuts and washers securing the power unit mounting plate to the mounting brackets and lift the power unit from the tail cone.

F. Install Tail Cone Anti-collision Light Power Unit

(1) Comply with the electrical safety precautions.

(2) Place the power unit on its mounting and connect the two electrical connectors to the power unit, ensuring that the mating surfaces are clean and undamaged.

(3) Secure the power unit to its mounting with the nuts
R and washers, connecting the metal braid and the bonding lead (if fitted) to the bonding stud on the power unit with the nut and washer. Torque-tighten the nut to 32 lbf in (0.362 mdaN).

(4) Check that the power unit is bonded in accordance with 20-27-11.

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G. Conclusion

R (1) If applicable, remove the locking sleeve from the
R tail gear jack.

(2) Remove the safety clip(s) and reset the circuit breaker(s) previously tripped.

(3) Make available electrical ground power as detailed in 24-41-00.

(4) Set the ANTI COLN light control switch to "ON" and check that the anti-collision lamp shows a flashing red light, operating in unison with other anti-collision lights, at a rate of between 40 and 100 flashes per minute.

(5) Set the ANTI COLN light control switch to "OFF".

(6) Switch off and disconnect electrical ground power as detailed in 24-41-00.

FLASHER UNIT - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

The anti-collision lights flasher unit is secured within a
R case (panel 5-123) mounted in the forward underfloor racking. The case is clamped to its mounting rack by two hold-down fasteners at the front and two hold-down pins and three index pins at the rear. A handle on the front of the case facilitates the removal and installation of the unit. Electrical connections are made through connectors at the case rear end plate.

2. Flasher Unit

A. Prepare

(1) Ensure that the ANTI COLN light control switch on the flight compartment roof panel is at OFF.

(2) Isolate the electrical generation and external power supplies as detailed in 24-00-00, Servicing.

(3) Open service compartment door 123 AB (Ref. 52-41-11) to gain access to the forward underfloor racking.

B. Remove

(1) Release the two hold-down fasteners from the lugs on the case front end plate.

(2) Withdraw the case from its mounting rack and remove the quick-release cable clamps to detach the cables from the top of the case. When the case is clear of the rack, lower the case on to a suitable support.

(3) Disconnect the cable loom from the flasher unit connector, L10A, at the case rear end plate.

(4) Loosen the screws securing the top cover to the case assembly and remove the cover from the chassis.

(5) Tilt the chassis to gain access to the flasher unit securing screws. Support the flasher unit,

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remove the four securing screws and washers and lift the flasher unit from its mounting.

C. Install

(1) Comply with the electrical safety precautions.

(2) Tilt the chassis, support the flasher unit on its mounting and secure it with the four screws and washers.

(3) Refit the top cover and secure it to the case assembly with the four screws.

(4) Connect the cable loom to the flasher unit connector, L10A, at the case rear end plate.

(5) Position the case on the end of the mounting rack support rail and secure the cables to the top of the case with the quick-release cable clamps.

(6) Slide the case back onto its mounting rack, ensuring that the two hold-down pins and the three index pins enter their respective holes in the case rear end plate.

(7) Secure the front of the case with the two hold-down fasteners.

(8) Ensure that the case is bonded in accordance with 20-27-11.

D. Conclusion

(1) Close and secure service compartment door 123 AB (Ref. 52-41-11).

(2) Cancel the electrical safety precautions taken before removal.

(3) Carry out an Operational Test of the anti-collision lights (Ref. 33-42-00).

MAIN LANDING LIGHTS - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

Two main landing lamps, one mounted in each wing root, illuminate the area in front of the aircraft during landing. The landing lamps have retractable/extensible mountings, and when not in use are retracted into housings in the aircraft structure.

Each lamp assembly is fitted with an automatic blowback device which allows the lamp to be blown back automatically into its housing, during flight, at air speeds greater than
R 300 kt, approximately, if the control switch has not been operated, or if the power supply to the lamp fails at the time of retraction.

Control of the landing lights is by switches on the flight compartment roof panel, and an adjacent caption indicates the extended condition of one or both landing lamps.

2. Main Landing Lamps

A landing lamp assembly is mounted in each wing root, close to the wing leading edge and fuselage intersection.

Each lamp comprises a 600 W quartz halogen filament in a sealed beam unit that can be extended from, or retracted into, its housing by an actuator driven by an integral electric motor. A motor control relay, and extend and
R retract limit switches in the motor circuit, terminate lamp movement at the required lights. A light control relay and a step-down transformer in the light circuit, connected to the 115 V a.c. input supply, provide a 28 V operating voltage for the 600 W filament.

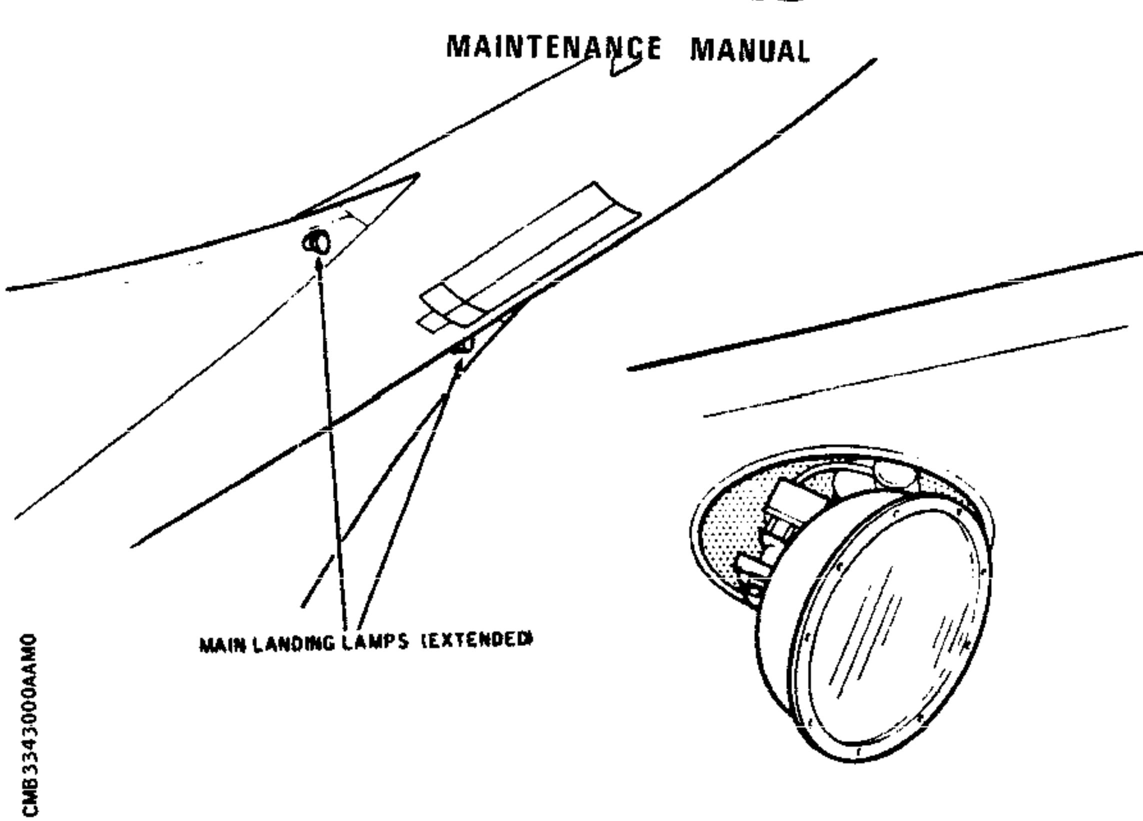
A blowback device comprising spring, ratchet roller and sun gear is fitted to the motor case, and allows air pressure on the lamp lens, above the predetermined value, to force the lamp back into its housing.

3. Operation

A. Control and Indication (Ref. Fig. 002)

Each landing lamp is controlled primarily by a MAIN LANDING, two-position (ON - OFF) light control switch, and a two-position (EXTEND - RETRACT) position control switch mounted on sub-panel 1 of the flight compartment roof panel (panel 4-211). Secondary control of the landing lamp light

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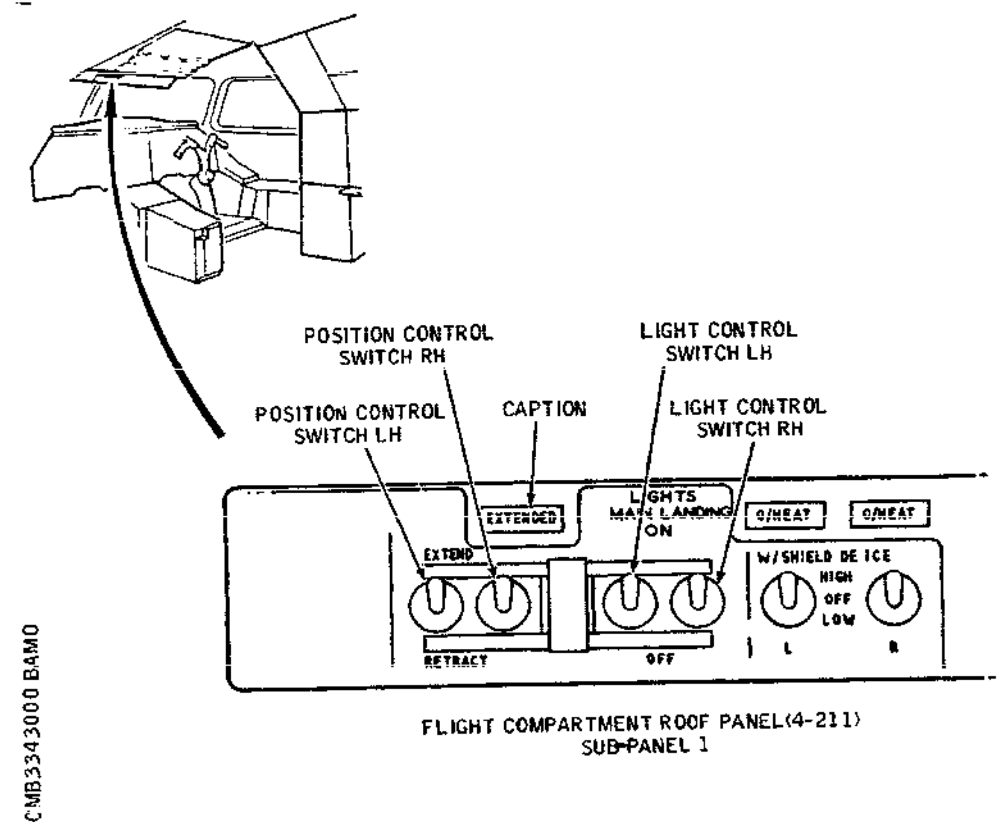
Main Landing Lamps
Figure 001

is through the contacts of the light control relay in the lamp assembly, and the contacts of the retract limit switch which connects the 115 V supply to the step-down transformer.

Secondary control of the landing lamp position is through the contacts of the extend/retract limit switches and the contacts of the motor control relay in the lamp assembly.

Normally the four landing light switches are operated simultaneously by a common switch bar, but each switch can be controlled independently if required. A blue EXTENDED caption, mounted close to the landing lamp control switches on the flight compartment roof panel, is operated by a contact of the light control relay, and is illuminated when either lamp position control switch is set to EXTEND and the lamp starts to move from its housing.

B. Functional Description (Ref. Fig. 003)



Controls and Indicators
Figure 002

When the aircraft electrical supplies are available and EXTEND is selected at a position control switch, a supply is connected through the extend limit switch and via the motor control relay to the 'extend' windings of the lamp motor which operates to extend the lamp from its housing.

As the lamp starts to extend the retract limit switch closes and connects a supply from the EXTEND position of the position control switch to energize the light control relay, the contacts of which change over to connect the ON position of the light control switch to the step-down transformer, and to provide an earth return to light the EXTENDED caption. Subsequent operation of the light control switch to ON connects a 115 V a.c. supply to the step-down transformer to give a 28 V operating voltage to light the 600 W filament. When the lamp is fully extended the supply to the lamp motor is interrupted by the operation of the extend limit switch which changes over and connects the supply to energize the motor control relay. When the relay is operated, one contact open-circuits the connection to the lamp motor, and a second contact connects a 'hold-on' supply to the

relay coil from the EXTEND position of the control switch.

When the position control switch is moved to RETRACT, the supply to the light control relay is interrupted, the relay is de-energized and the contacts open to isolate the step-down transformer, and to open-circuit the earth connection of the EXTENDED caption. The caption and the landing light are thus extinguished. A supply is also fed from the RETRACT position of the switch, through the retract limit switch to the 'retract' windings of the lamp motor which operates to retract the lamp into its housing. The 'hold-on' supply to the motor control relay is also disconnected and the relay is de-energized in preparation for a subsequent 'extend' operation.

When the lamp is fully retracted the retract limit switch is operated and the contacts open to disconnect the supply from the lamp motor and to isolate the light control relay.

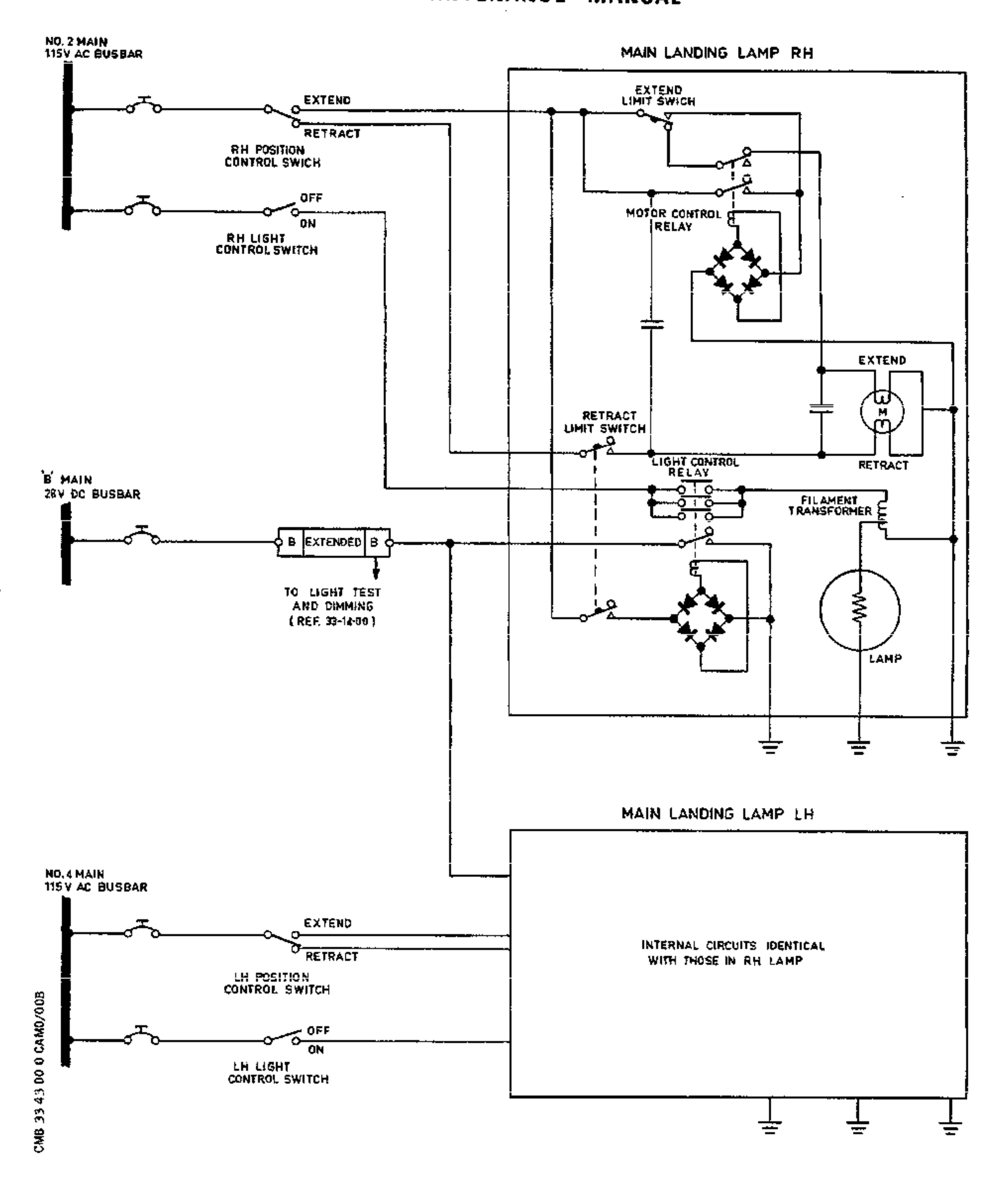
If the landing lamp remains extended after take-off, due to a power supply failure, or by the position control switch being left at EXTEND, the automatic blowback device allows air pressure to force the lamp back into the retracted
R position when the airspeed exceeds 300 kt, approximately.

If the position control switch is at EXTEND when blowback occurs, the hold-on circuit of the motor control relay ensures that the relay remains energized, and therefore the supply to the extend windings of the motor stay isolated. This prevents the lamp from extending and retracting in a 'pumping' action.

To extend the lamp after blowback, it is therefore necessary to move the position control switch to RETRACT to release the hold-on circuit, and then reset the switch to EXTEND.

4. Electrical Power Supplies

Each landing lamp has two separate electrical power supplies. The supplies for the RH landing lamp are obtained from No.2 main 115 V a.c. busbar, each supply being fed through separate circuit breakers on panel 13-215. The supplies for the LH landing lamp are obtained from No.4 main 115 V a.c. busbar, each supply being fed through separate circuit breakers on panel 14-216. The EXTENDED caption is supplied from 'B' main 28 V d.c. busbar through a circuit breaker on panel 15-216.



- Main Landing Lights - Simplified Schematic
Figure 003

R

MAIN LANDING LIGHTS - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

The LH and RH main landing lights circuits are similar, therefore the procedures and charts are applicable to either. Where two identical components are involved, i.e., one in each circuit, both references to the associated components listed in Table 101 are given, e.g., 'Replace Switch (7) or (9)'.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para.2.). As appropriate, set the LH or RH main landing lamp light control switch to "ON" and the position control switch to "EXTEND". Check that the associated lamp filament and the position indicator filaments light when the lamp begins to extend.

NOT OK —
1. Lamp fails to extend = Chart 101.
2. Indicator filaments fail to light - Chart 102.
3. Lamp filament fails to light - Chart 103.

OK

B. Set the position control switch to "RETRACT" and check that the position indicator filament and the lamp filament go out when the lamp is fully retracted.

NOT OK —
1. Lamp fails to retract - Chart 104.
2. Position indicator filaments fail to go out - renew Lamp (11) or (12).
3. Lamp filament fails to go out - renew Lamp (11) or (12).

LANDING LAMP FAILS TO EXTEND WHEN POSITION CONTROL SWITCH IS AT "EXTEND".

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

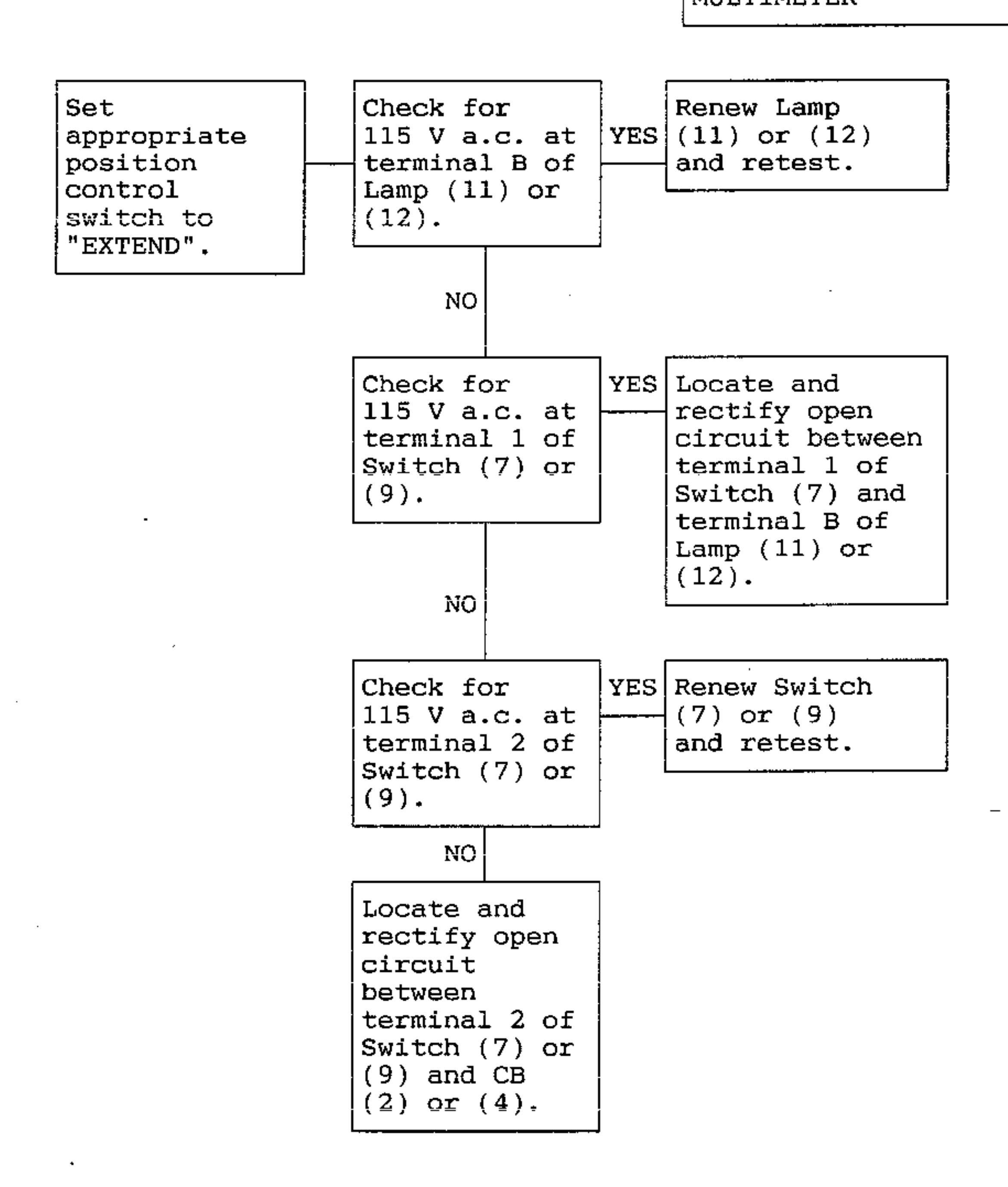


Chart 101

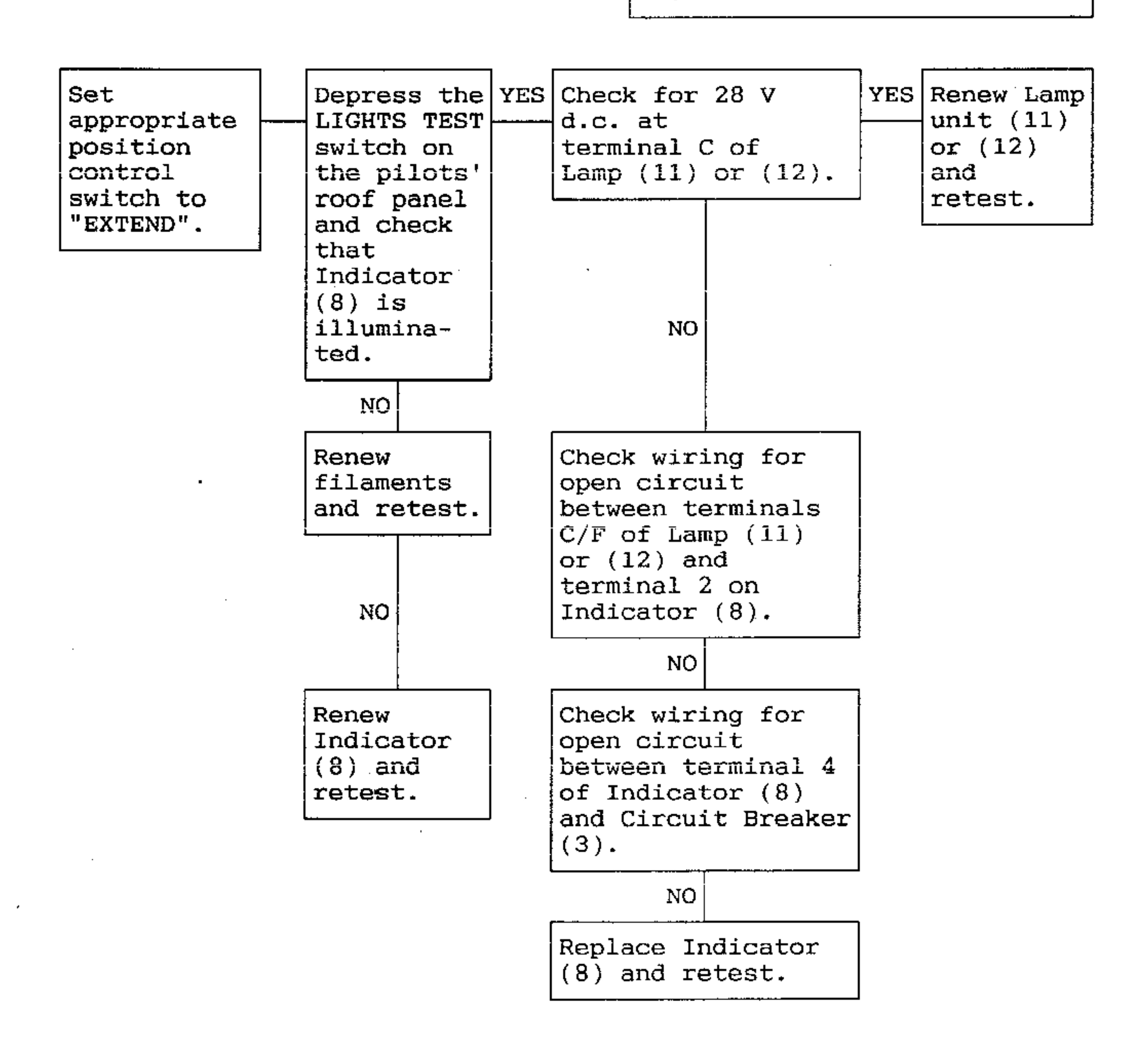


Chart 102

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LANDING LAMP FILAMENT FAILS TO LIGHT WHEN THE LIGHT CONTROL SWITCH IS AT "ON" AND THE LAMP IS EXTENDED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

Set appropriate light control switch to "ON" and the position control switch to "EXTEND".

Check for 115 V a.c. at terminal M of Lamp (11) or (12).

YES → Renew sealed unit filament and retest.

NO → Renew Lamp (11) or (12) and retest.

NO → Check for 115 V a.c. at terminal 1 of Switch (6) or (10).

YES → Check wiring for open circuit between terminal 1 of Switch (6) or (10) and terminal M of Lamp (11) or (12).

NO → Check for 115 V a.c. at terminal 2 of Switch (6) or (10).

YES → Renew Switch (6) or (10) and retest.

NO → Locate and rectify open circuit between terminal 2 of Switch (6) or (10) and CB (1) or (5).

Chart 103

LANDING LAMP FAILS TO RETRACT WHEN THE POSITION CONTROL SWITCH IS SET TO "RETRACT".

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

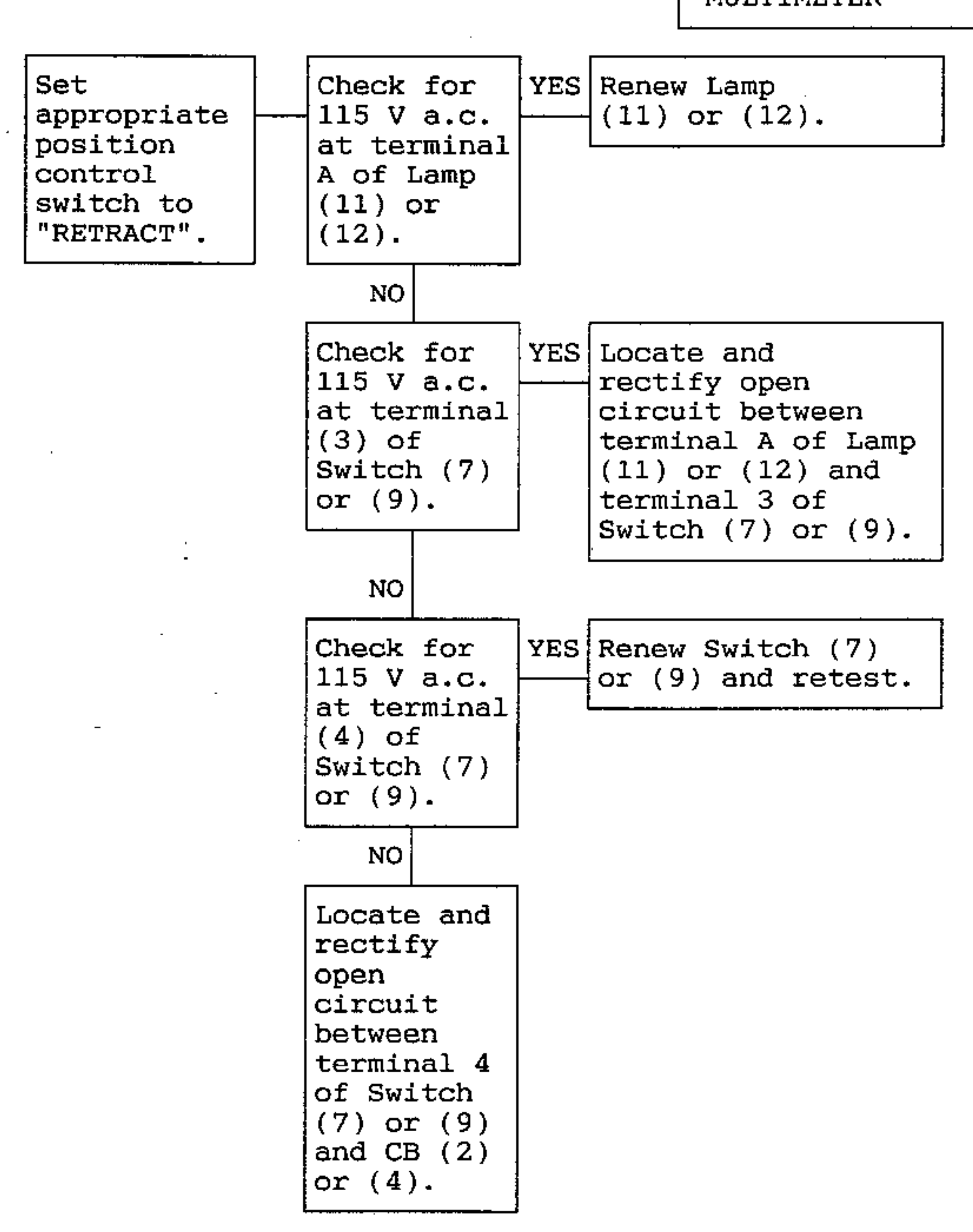


Chart 104

					MANUAL REF.	
ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit breaker 115 V	-	13-215	L24	Map ref. C12	24-50-00 R/I	
(2) Circuit breaker 115 V	-	13-215	L21	Map ref. B11	24-50-00 R/I	
(3) Circuit breaker 28 V	-	15-216	L23	Map ref. A12	24-50-00 R/I	
(4) Circuit breaker 115 V	-	14-216	L22	Map ref. D8	24-50-00 R/I	
(5) Circuit breaker 115 V	-	14-216	L25	Map ref. C8	24-50-00 R/I	
(6) RH landing lamp light control switch	-	4-211	L26	Pilots' roof panel	33-43-00 R/I	
(7) RH landing lamp position control switch	-	4-211	L28	Pilots' roof panel	33-43-00 R/I	
(8) Position indicator	-	4-211	L30	Pilots' roof panel	33-14-00 R/I	
(9) LH landing lamp position control switch	-	4-211	L29	Pilots' roof panel	33-43-00 R/I	
(10) LH lamp light control switch	-	4-211	L27	Pilots' roof panel	33-43-00 R/I	
(11) LH landing lamp	-	511	L32	LH wing root	33-43-00 R/I	
(12) RH landing lamp	-	611	L31	RH wing root	33-43-00 R/I	

Component Identification
Table 101

R

MAIN LANDING LIGHTS - REMOVAL/INSTALLATION

1. General

Instructions for the removal and installation of associated control switches and an associated caption light module, mounted on the flight compartment roof panel, are contained in 33-00-00.

MAIN LANDING LIGHTS - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains an Operational Test only, which details the procedure to prove the correct operation of the main landing lights. Functional and System Tests are not considered necessary in this application.

2. Operational Test

CAUTION: DO NOT LEAVE THE LANDING LAMP LIT FOR MORE THAN 5 min IN ANY 10 min PERIOD.

A. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

B. Test

(1) On the flight compartment roof panel, depress the LIGHTS TEST button and check that the main landing lights EXTENDED caption is illuminated.

(2) Release the button and check that the caption is extinguished.

(3) Set the left MAIN LANDING LIGHTS control switch, on the flight compartment roof panel, to "ON". Check that the left landing lamp is not lit.

(4) Set the left MAIN LANDING LIGHTS - RETRACT - EXTEND switch to "EXTEND". As the lamp starts to extend from its housing, check that the filament is lit and the EXTENDED caption illuminated.

(5) Ensure that the lamp travels to its fully extended position and that the motor cuts out.

(6) Set the left MAIN LANDING LIGHTS control switch to "OFF" and check that the light is extinguished.

(7) Return the switch to "ON" and check that the lamp is lit.

(8) Set the left MAIN LANDING LIGHTS - RETRACT - EXTEND switch to "RETRACT". Check that the lamp

travels to its fully retracted position in its housing, and that during the initial retraction sequence the landing light and the EXTENDED caption are extinguished, and when the lamp reaches its fully retracted position in its housing the motor cuts out.

(9) Set the left MAIN LANDING LIGHTS control switch to "OFF".

(10) Repeat operations (3) to (9) with respect to the right switches and lamp.

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

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LANDING LIGHT ASSEMBLY - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

This topic contains instructions for the renewal of a landing lamp glass cover (lens) and the renewal of a sealed beam unit, and for the removal and installation of a landing lamp assembly.

Each landing lamp is secured to a lamp door which forms part of the bottom surface of the wing close to the leading edge and fuselage intersection. The lamp door hinges downward to facilitate easy removal and installation of the lamp assembly.

Renewal of a glass cover and a sealed beam unit can be carried out with the lamp extended or retracted, or with the lamp door open or closed, as convenient.

2. Glass Cover (Ref. Fig. 401)

A. Renew

(1) Support the glass cover and remove the three screws securing the glass cover to the lamp inner assembly. Remove the glass cover and the retaining ring from the lamp, taking care that the sealed beam unit does not fall from its housing.

R CAUTION: ENSURE THAT THE SEALED BEAM UNIT IS
R CORRECTLY ORIENTATED AND POSITIONED IN
R ITS HOUSING BEFORE FITTING THE RETAINING
R RING AND GLASS COVER TO THE LAMP, OTHERWISE
R DAMAGE MAY BE CAUSED TO THE LAMP INNER
R ASSEMBLY AND THE SEALED BEAM UNIT.

(2) Ensure that the sealed beam unit is correctly positioned in its housing, with the word TOP, stencilled on the glass cover, located toward the the drive assembly, i.e., toward the front of the aircraft when the lamp is installed, and the locating lug, on the side of the sealed beam unit, correctly seated in the adjustment bracket within the lamp housing.

(3) Press the sealed beam unit inward against the pressure springs, maintain the pressure and refit the retaining ring and glass cover to the lamp and secure the glass cover with the screws.

3. Sealed Beam Unit (Ref. Fig. 401)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the MAIN LANDING LIGHTS light control switch is at OFF.

(2) Trip the associated circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG LT SUP	13-215	L24	C12
RH LDG LT CONT	13-215	L21	B11
LH LDG LT SUP	14-216	L25	C8
LH LDG LT CONT	14-216	L22	D8

C. Renew

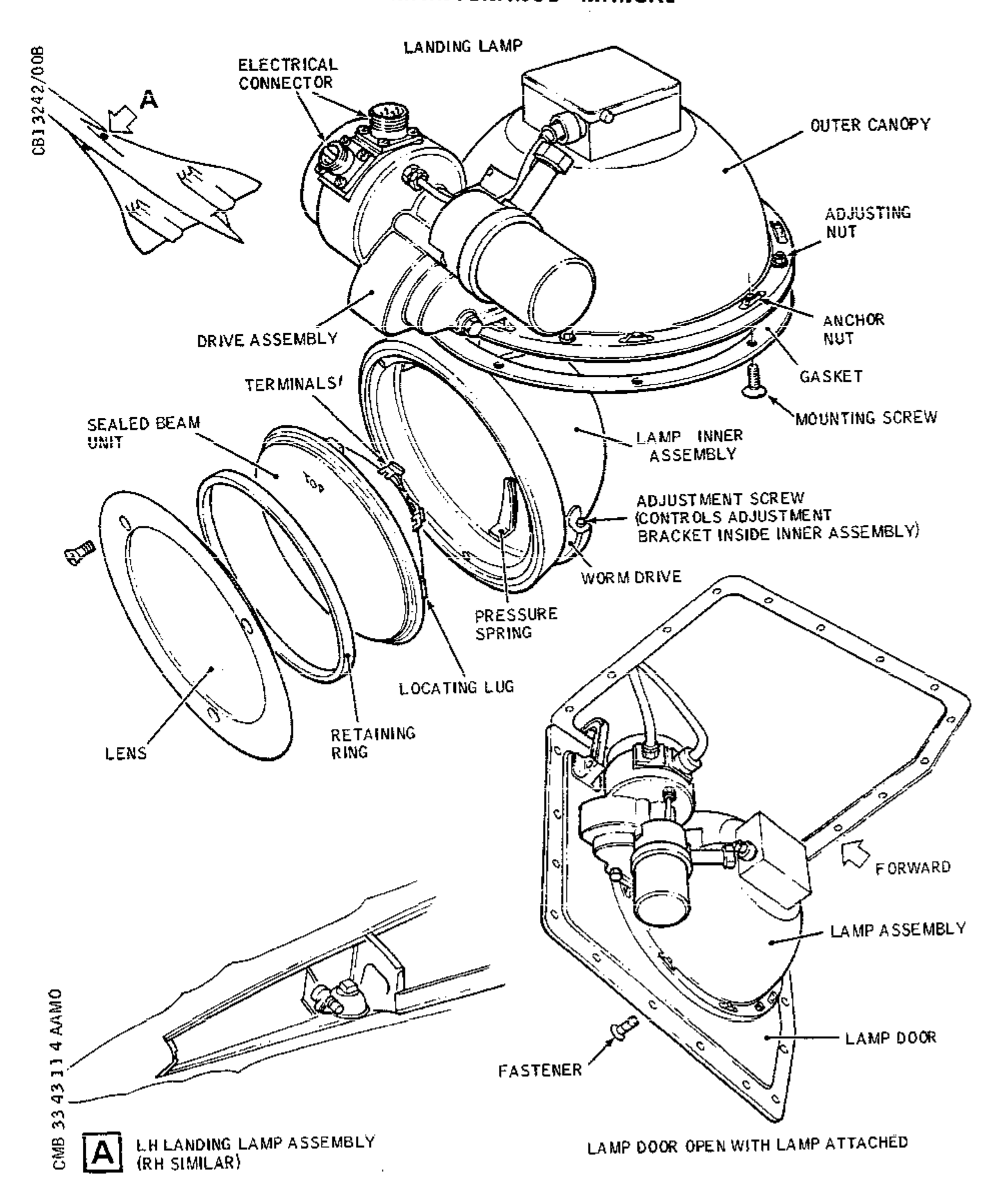
(1) Support the glass cover and remove the screws securing the glass cover to the lamp inner assembly. Remove the glass cover and the retaining ring from the lamp.

(2) Withdraw the sealed beam unit from the inner assembly sufficiently to gain access to the screw terminals.

(3) Disconnect the electrical cables from the terminals on the sealed beam unit. Label the cables to assist identification for reconnection.

(4) Remove the sealed beam unit.

R CAUTION: ENSURE THAT THE SEALED BEAM UNIT IS



- Landing Lamp Assembly - Installation
R Figure 401

R CORRECTLY ORIENTATED AND POSITIONED IN
R ITS HOUSING BEFORE FITTING THE RETAINING
R RING AND GLASS COVER TO THE LAMP, OTHERWISE
R DAMAGE MAY BE CAUSED TO THE LAMP INNER
R ASSEMBLY AND THE SEALED BEAM UNIT.

(5) Support the replacement unit and connect the electrical cables to the terminals, ensuring that the connections are made in accordance with the cable identifications.

(6) Orientate the sealed beam unit until the word TOP, stencilled on the glass cover, is located toward the drive assembly, i.e., toward the front of the aircraft when the lamp is installed.

(7) Insert the sealed beam unit into its housing in the lamp inner assembly and manipulate the unit until the locating lug is seated in the adjustment bracket within the housing.

(8) Press the sealed beam unit inward against the pressure springs, maintain the pressure and refit the retaining ring and lens to the lamp and secure the glass cover with the screws.

D. Conclusion

(1) Remove the safety clips and reset the circuit breakers tripped before renewal.

(2) Carry out an Operational Test of the main landing lights as detailed in 33-43-00, Adjustment/Test, followed by a Beam Alignment Test as detailed in 33-43-11, Adjustment/Test.

4. Landing Lamp (Ref. Fig. 401)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-
Torque spanner, 30 lbf in (0.339 mdaN)	-

B. Prepare

(1) Ensure that the MAIN LANDING LIGHTS position control and light control switches are at RETRACT and OFF, respectively.

(2) Trip the LDG LTS POSN IND circuit breaker L23, on panel 15-216, map ref.A12, and fit a safety clip.

(3) Trip the associated circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG LT SUP	13-215	L24	C12
RH LDG LT CONT	13-215	L21	B11
LH LDG LT SUP	14-216	L25	C8
LH LDG LT CONT	14-216	L22	D8

(4) Support the lamp door and unscrew the fasteners securing the door to the bottom surface of the wing.

(5) Lower the door, complete with lamp, on its hinges.

C. Remove

(1) Disconnect the lamp assembly electrical connectors.

(2) Support the lamp assembly. Remove the screws around the periphery of the lamp outer canopy and lift the
R lamp, together with the gasket, from the door.

D. Install

(1) Comply with the electrical safety precautions.

(2) Orientate the lamp assembly so that the drive assembly is located toward the front of the aircraft.

R (3) Fit the lamp assembly, together with the gasket, to its mounting on the lamp door and secure the outer canopy to the door with the eight mounting screws, ensuring that the three horizontal adjusting nuts and bolts are in position and tight.

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(4) Connect the lamp assembly electrical connectors, ensuring that the mating surfaces are clean and undamaged.

(5) Check that the lamp is bonded in accordance with 20-27-11.

E. Conclusion

(1) Close the lamp door and secure it by screwing in the fasteners. Torque-load the fasteners to 30 lbf in (0.339 mdaN).

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) Carry out an Operational Test of the main landing lights as detailed in 33-43-00, Adjustment/Test, followed by a Beam Alignment Test as detailed in 33-43-11, Adjustment/Test.

LANDING LIGHT ASSEMBLY - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

CAUTION: THE MAIN LANDING LAMPS MUST NOT REMAIN ON FOR PERIODS GREATER THAN 20 min. EACH SUCH PERIOD MUST BE FOLLOWED BY A 45 min REST PERIOD.

IF LAMPS ARE ON FOR PERIODS NOT EXCEEDING 5 min, EACH SUCH PERIOD MUST BE FOLLOWED BY A 5 min REST PERIOD.

1. General

This topic contains instructions for a Beam Alignment Test to ensure that the adjustable main landing lamps are correctly positioned with respect to the aircraft axis. The test includes lamp retraction adjustments to ensure full retraction of the lamp after beam alignment adjustments have been completed.

Operational, Functional and System Tests are not applicable to this topic, but an Operational Test of the main landing lights is detailed in 33-43-00, Adjustment/Test.

2. Beam Alignment Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-
Torque spanner, 30 lbf in (0.339 mdaN)	-
Clinometer	-

B. Prepare (Ref. Fig. 501)

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Ensure that the aircraft is standing on its wheels on a level surface with the nose landing gear bay
R doors closed. Ensure that a clear space extending
R at least 60 ft (18.3 m) is available in front of
R the main landing lamps.

R (3) At the seat rails above the main landing gear, at frame 58, check the aircraft attitude, using the clinometer. The roll attitude must be 0 deg. The pitch attitude may be 0 deg, 1 deg or 2 deg nose-up.

R (4) From the point on the ground immediately below the centre of each main landing lamp, mark a line (using chalked string or other suitable method) extending forward for approximately 60 ft (18.3 m) parallel to the aircraft centre line.

R (5) Ensure that the MAIN LANDING LIGHTS (ON - OFF) light control switches on the flight compartment roof panel are at OFF, and the RETRACT - EXTEND position control switches are at RETRACT.

C. Test

(1) Set the appropriate left or right MAIN LANDING LIGHTS (RETRACT - EXTEND) position control switch to "EXTEND" and check that the associated landing lamp travels to its fully extended position.

(2) Set the associated MAIN LANDING LIGHTS light control switch to "ON" and check that the landing lamp is lit.

R (3) Check that the ellipse of light formed by the beam is bisected by the associated line drawn in operation B.(4). If not, adjust the lamp horizontal setting as detailed in paragraph D.

R (4) Check the vertical alignment as detailed in paragraph E. Vertical Adjustment. If necessary, adjust the vertical setting as detailed.

D. Horizontal Adjustment (Ref. Fig. 502)

(1) Set the associated light control switch to "OFF".

(2) Trip the associated circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG LT SUP	13-215	L24	C12

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG LT CONT	13-215	L21	B11
LH LDG LT SUP	14-216	L25	C8
LH LDG LT CONT	14-216	L22	D8

(3) Loosen the screws securing the lamp outer canopy to the lamp door.

(4) Support the lamp door and unscrew the fasteners securing the door to the bottom surface of the wing. Lower the door, complete with lamp, on its hinges.

(5) Loosen the three horizontal adjusting nuts disposed at 120 deg intervals around the periphery of the lamp outer canopy. Ensure that the white lines painted on the outer canopy coincide with those painted on the canopy retaining collar.

NOTE: A new lamp will not have painted lines.

(6) Close the lamp door and secure it temporarily with the fasteners.

(7) Remove the safety clips and reset the circuit breakers tripped in operation (2).

(8) Set the associated MAIN LANDING LIGHTS light control switch to "ON".

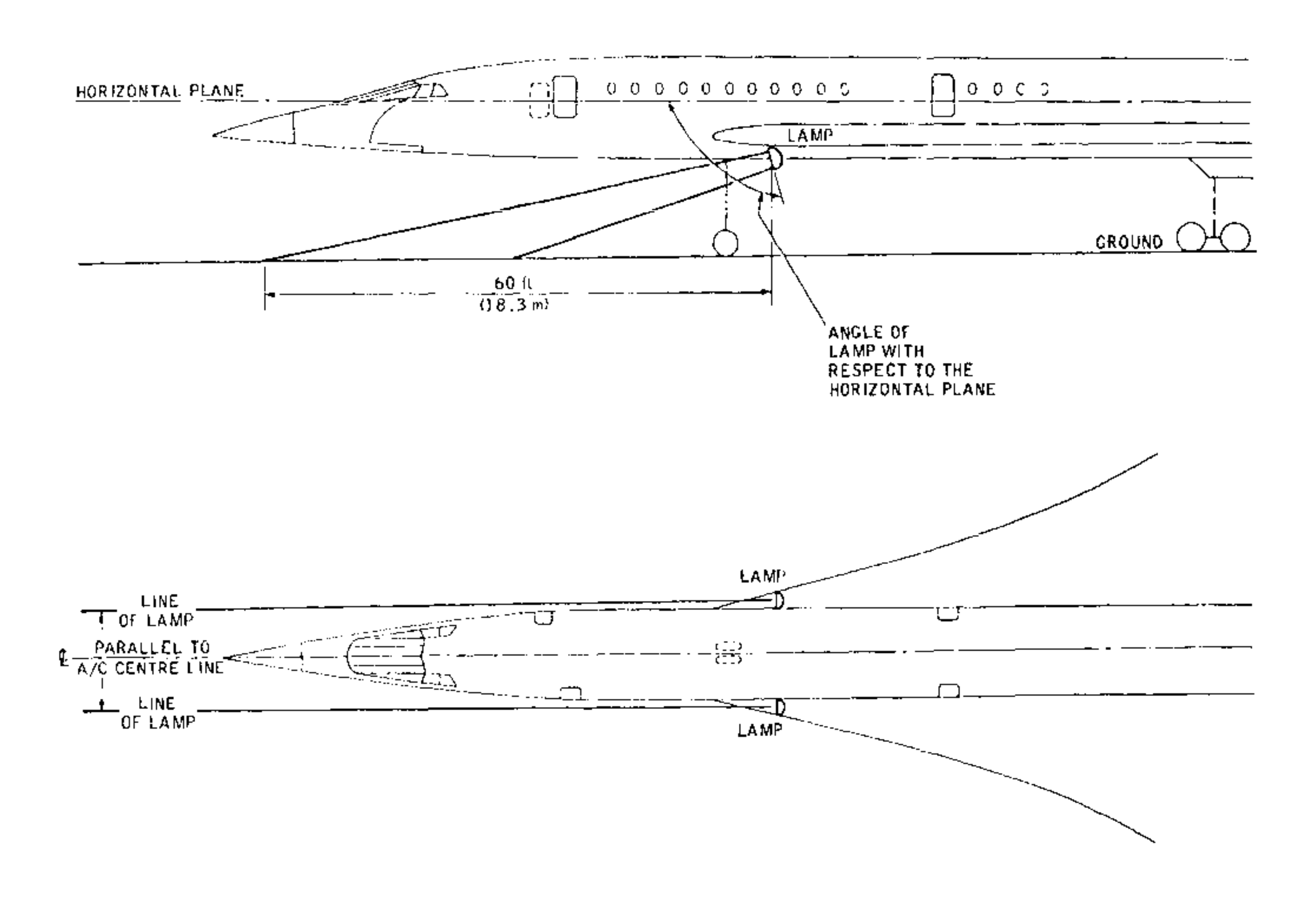
(9) Rotate the lamp until the correct horizontal setting is obtained (an adjustment of ±8 deg is provided).

(10) Tighten the screws securing the lamp outer canopy to the lamp door.

(11) Set the associated MAIN LANDING LIGHTS position control switch to "RETRACT". Check that the lamp travels to its fully retracted position and that it fits flush in its housing.

(12) Set the position control switch to "EXTEND" and, when the lamp is fully extended, check that the correct horizontal setting is still obtained.

CMB 33 43 11 5 AAM0 CB15406/00A



R

Main Landing Lamps
Figure 501

(13) Set the associated light control switch to "OFF".

(14) Trip the associated circuit breakers listed in paragraph (2) and fit safety clips.

(15) Release the lamp door fasteners and lower the door on its hinges.

(16) Tighten the three horizontal adjusting nuts around the periphery of the lamp outer canopy.

NOTE: If a new lamp assembly is installed, ensure that white lines are painted on the outer canopy and on the canopy retaining collar, for future horizontal alignment.

(17) Close the lamp door and secure it with the fasteners. Torque-tighten the fasteners to 30 lbf in (0.339 mdaN).

(18) Remove the safety clips and reset the circuit breakers tripped in operation (14).

R E. Vertical Adjustment (Ref. Fig.501 and 502)

(1) Ensure that the associated MAIN LANDING LIGHTS light control switch is at OFF and that the lamp is extended.

(2) Ensure that the glass cover of the lamp is clean and dry. Support the clinometer on the cover face
R and check that the angle of the lamp with respect
R to the horizontal plane is as follows:-

R Aircraft nose-up attitude 0 deg: clinometer
R reading 106 deg

R Aircraft nose-up attitude 1 deg: clinometer
R reading 105 deg

R Aircraft nose-up attitude 2 deg: clinometer
R reading 104 deg

(3) If necessary, adjust the 'extend' limit micro-switch adjusting screw, painted red, inside the
R lamp outer canopy, until the correct angle
R is obtained.

R NOTE: Counter-clockwise rotation of the screw will
R increase the extension angle. One full turn
R is equal to 2 deg, approximately.

(4) Set the associated MAIN LANDING LIGHTS position control switch to "RETRACT". Check that the lamp travels to its fully retracted position and that it fits flush in its housing.

(5) Set the position control switch to "EXTEND" and, when the lamp is fully extended, using the clinometer, check that the correct vertical angle with respect to the horizontal plane is still obtained. Adjust as necessary and after each adjustment carry out a retract/extend cycle and recheck the lamp angle.

F. Beam Elliptical Axis Adjustment (Ref. Fig. 502)

(1) If the major elliptical axis of the beam is not parallel to the aircraft vertical axis, loosen the screws securing the glass cover to the lamp. Adjust the screw on the worm drive on the side of the lamp inner assembly to rotate the sealed beam unit until the correct setting is obtained (an adjustment of ±8 deg is provided).

(2) Set the associated MAIN LANDING LIGHTS light control switch to "OFF".

(3) Tighten the glass cover securing screws.

G. Lamp Retraction Adjustment (Ref. Fig. 502)

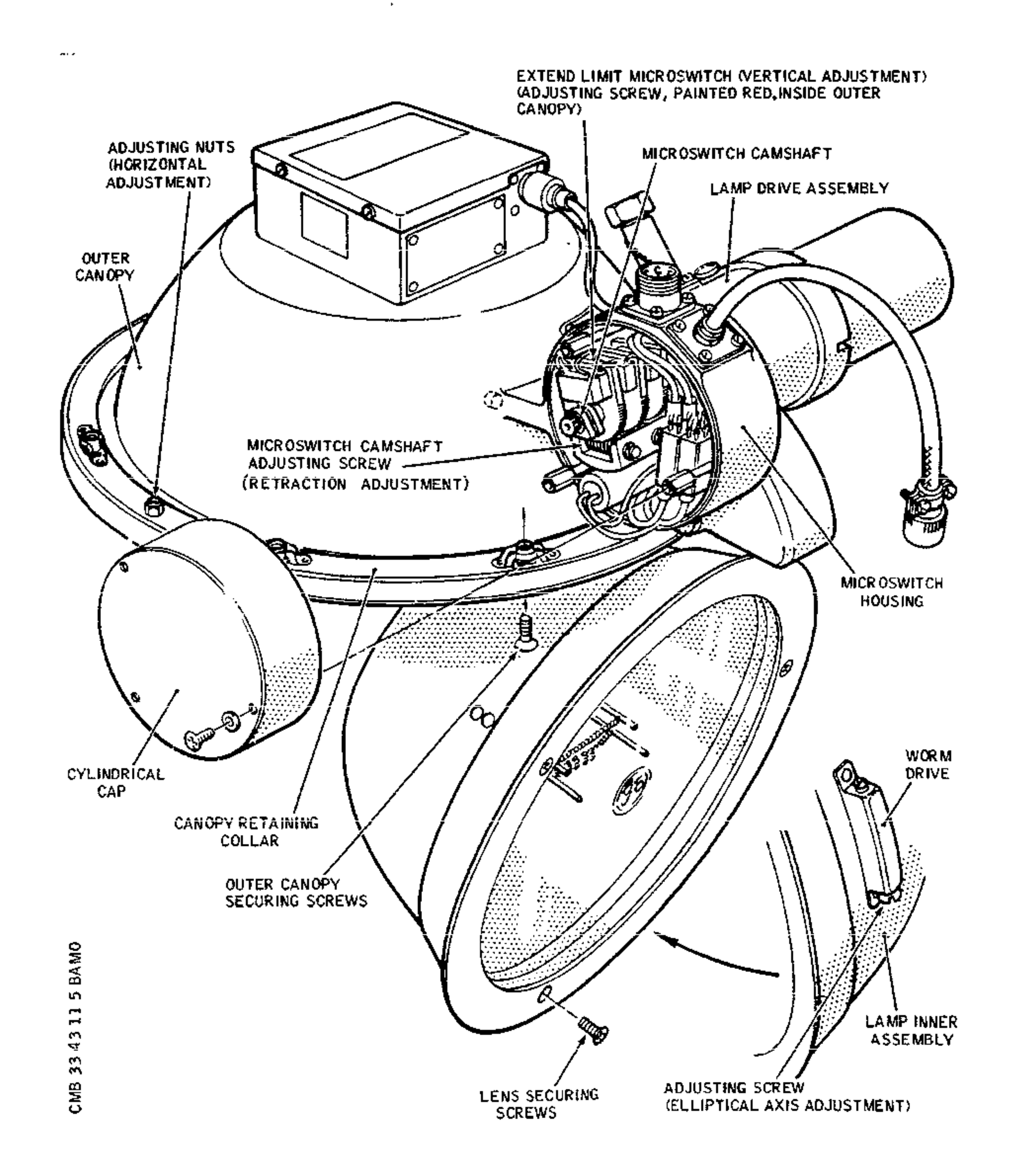
(1) If the lamp does not fit flush in its housing after retraction, trip the associated circuit breakers listed in paragraph D.(2) and fit safety clips.

(2) Support the lamp door and unscrew the fasteners securing the door to the bottom surface of the wing. Lower the door, complete with lamp, on its hinges.

(3) Remove the cylindrical cap covering the micro-switches on the lamp drive assembly.

(4) Adjust the microswitch camshaft by turning the adjusting screw (1/2 turn of the screw is approximately 0.05 in (1.27 mm) adjustment, measured between the rear edge of the glass cover and the outer canopy retaining collar).

(5) Close the lamp door and secure it temporarily with



Landing Lamp Adjustment Controls
Figure 502

the fasteners.

(6) Remove the safety clips and reset the circuit breakers tripped in operation (1).

(7) Set the associated main landing lights position control switch to "RETRACT". After retraction check that the lamp is flush in its housing.

(8) Repeat operations (1) and (2), and (4) to (7), until the correct setting is obtained.

(9) After final adjustment, trip the associated circuit breakers listed in paragraph D.(2), and fit safety clips.

(10) Release the fasteners securing the lamp door and lower the door on its hinges.

(11) Refit the cylindrical cap to the lamp drive assembly.

(12) Close the lamp door and secure it with the fasteners. Torque-tighten the fasteners to 30 lbf in (0.339 mdaN).

(13) Remove the safety clips and reset the circuit breakers tripped in operation (9).

H. Conclusion

R (1) Carry out an Operational Test of the main landing lights as detailed in 33-43-00, Adjustment/Test.

LAND/TAXI AND TURN-OFF LIGHTS - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

Two land/taxi lamps, mounted on the nose landing gear doors, supplement the illumination provided by the main landing lamps during landing (Ref. 33-43-00), and illuminate the area in front of the aircraft when taxiing.

Two taxi/turn-off lamps, one mounted on each side of the forward fuselage, provide ground illumination for identifying turn-off points.

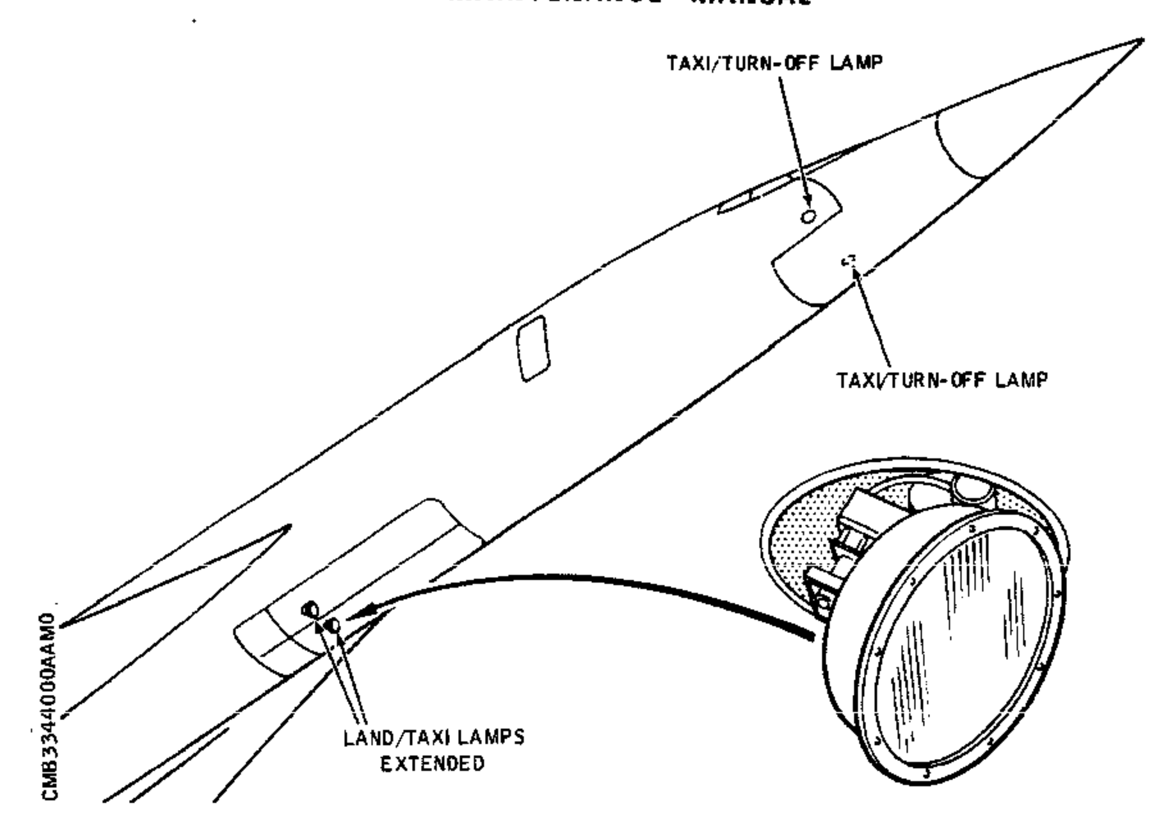
The land/taxi and taxi/turn-off lamps, together, give ground illumination during taxiing of approximately 60 deg each side of the aircraft centre line.

The land/taxi lamps have retractable/extensible mountings and, when not in use, are retracted into housings in the aircraft structure. The lamps are extended to an intermediate position before landing and automatically extended on landing to the full position for taxiing, thereby changing the angle of the beam to compensate for the attitude change. Each lamp assembly is fitted with an automatic blowback device which allows the lamp to be blown back automatically into its housing during flight, at airspeeds greater than
R 300 kt, approximately, if the control switch has not been operated, or if the power supply to the lamp fails at the time of retraction.

Control of the land/taxi and turn-off lights is effected by switches on the flight compartment roof panel, operating in conjunction with supply control contactors mounted in the forward underfloor racking. A caption mounted close to the switches on the roof panel indicates the extended condition of one or both land/taxi lamps.

2. Land/Taxi Lamps

A land/taxi lamp assembly is mounted in each door of the nose landing gear. Each lamp comprises a 600 W quartz halogen filament used during landing, and a 400 W quartz halogen filament used during taxiing, both contained in a sealed beam unit that can be extended from, or retracted into, its housing by an actuator driven by an integral electric motor. A motor control relay, 'land' and 'taxi' extend limit switches and a retract limit switch in the motor circuit, terminate lamp movement at the required limits. A light control relay and a step-down transformer in the light circuit, connected to the 115 V a.c. supply, provide a 28 V



Land/Taxi and Turn-off Lamps
Figure 001

operating voltage for the 600 W and 400 W filaments.

R A blowback device comprising spring, ratchet roller and
R sun gear is fitted to the motor case, and allows air
R pressure on the lamp lens, above the predetermined value,
R to force the lamp back into its housing.

3. Taxi/Turn-off Lamps

A taxi/turn-off lamp is fitted to each side of the nose fairing below the forward facing windshields.

Each lamp consists of a 28 V 450 W sealed beam filament unit secured in a housing in the aircraft structure.

4. Land/Taxi Contactors

Two contactors, associated with the land/taxi lamps, are housed in the ground power panel (panel 10-123) in the forward underfloor racking.

5. Taxi/Turn-off Contactors

Two contactors, associated with the taxi/turn-off lamps, are mounted on the front structure of the forward underfloor racking (1-123).

6. Operation

A. Control and Indication (Ref. Fig. 002)

Each land/taxi lamp is controlled primarily by a LANDING TAXI, two-position (ON - OFF) light control switch, and a two-position (EXTEND - RETRACT) position control switch mounted on sub-panel 1 of the flight compartment roof panel (panel 4=211).

A blue EXTENDED caption, mounted close to the land/taxi position control switches on the flight compartment roof panel, is illuminated when either lamp position control switch is set to EXTEND.

Normally the four land/taxi control switches are operated by a common switch bar, but each switch can be operated independently if required.

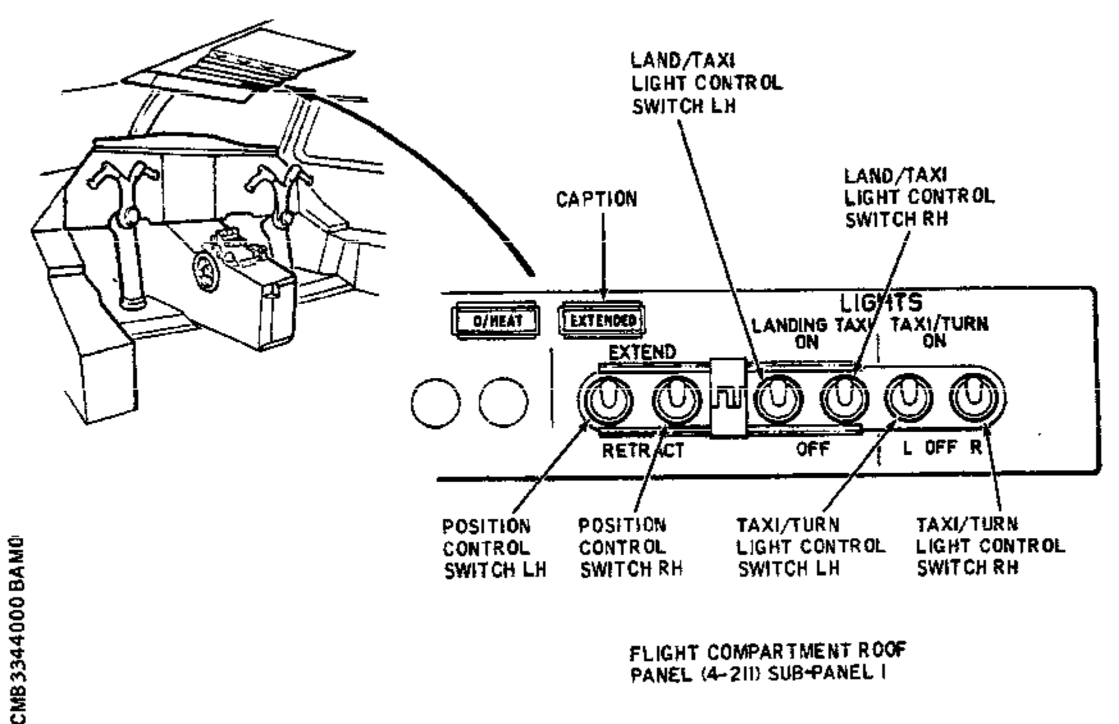
Each taxi-turn-off light is controlled by a TAXI/TURN two-position (ON - OFF) light control switch on sub-panel 1 of the flight compartment roof panel.

B. Functional Description (Ref. Fig.003 and 004)

During flight, when EXTEND is selected at a LANDING TAXI position control switch, a supply is connected through the 'land' limit switch to the 'extend' windings of the lamp motor which operates to extend the lamp from its housing.

As the lamp starts to extend, the retract limit switch closes and connects a supply from the EXTEND position of the switch to energize the light control relay, the contacts of which change over and connect the ON position of the light control switch to the step-down transformer, and to complete an earth return to light the EXTENDED caption. Subsequent operation of the light control switch to ON connects a 115 V a.c. supply to the step-down transformer to give a 28 V operating voltage to light the 600 W 'land' filament, through a contact of the land/taxi supply control contactor.

When the lamp is extended to the intermediate 'land' position, the supply to the lamp motor is interrupted by the operation of the 'land' limit switch which



Controls and Indicators
Figure 002

changes over to connect the supply to energize the motor control relay. When the relay is operated, one contact open-circuits the connection to the lamp motor, and a second contact connects a 'hold-on' supply to the relay coil from the EXTEND position of the control switch.

When the aircraft lands, the external supply control contactors are energized by the operation of the landing gear weight switch control relays, and the contacts change over. One contact completes an alternative supply from the EXTEND position of the control switch, through the internal 'taxi' limit switch to the extend windings of the lamp motor which operates to extend the lamp from the intermediate position to the fully extended 'taxi' position. A second contact open=circuits the 600 W land filament supply, and a third contact completes the supply to light the 400 W taxi filament.

When the lamp is fully extended, the supply to the lamp motor is interrupted by the operation of the 'taxi' limit switch which opens to isolate the lamp motor

'extend' windings.

Setting the LANDING TAXI position control switch to RETRACT interrupts the supply to the integral light control relay, the relay is de-energized and the contacts open to isolate the step-down transformer, and to open-circuit the earth connection of the EXTENDED caption. The caption and the taxi light are thus extinguished. A supply is also fed from the RETRACT position of the switch, through the retract limit switch, to the retract windings of the lamp motor which operates to retract the lamp into its housing. The 'hold-on' supply to the motor control relay is also disconnected and the relay is de-energized in preparation for a subsequent 'extend' operation.

In the fully retracted position the retract limit switch is operated and the contacts open to disconnect the supply from the lamp motor and to isolate the light control relay.

If the land/taxi lamp remains extended after take-off, due to a power supply failure, or by the position control switch being left at EXTEND, the automatic blowback device allows air pressure to force the lamp back into the retracted position when the airspeed
R exceeds 300 kt, approximately.

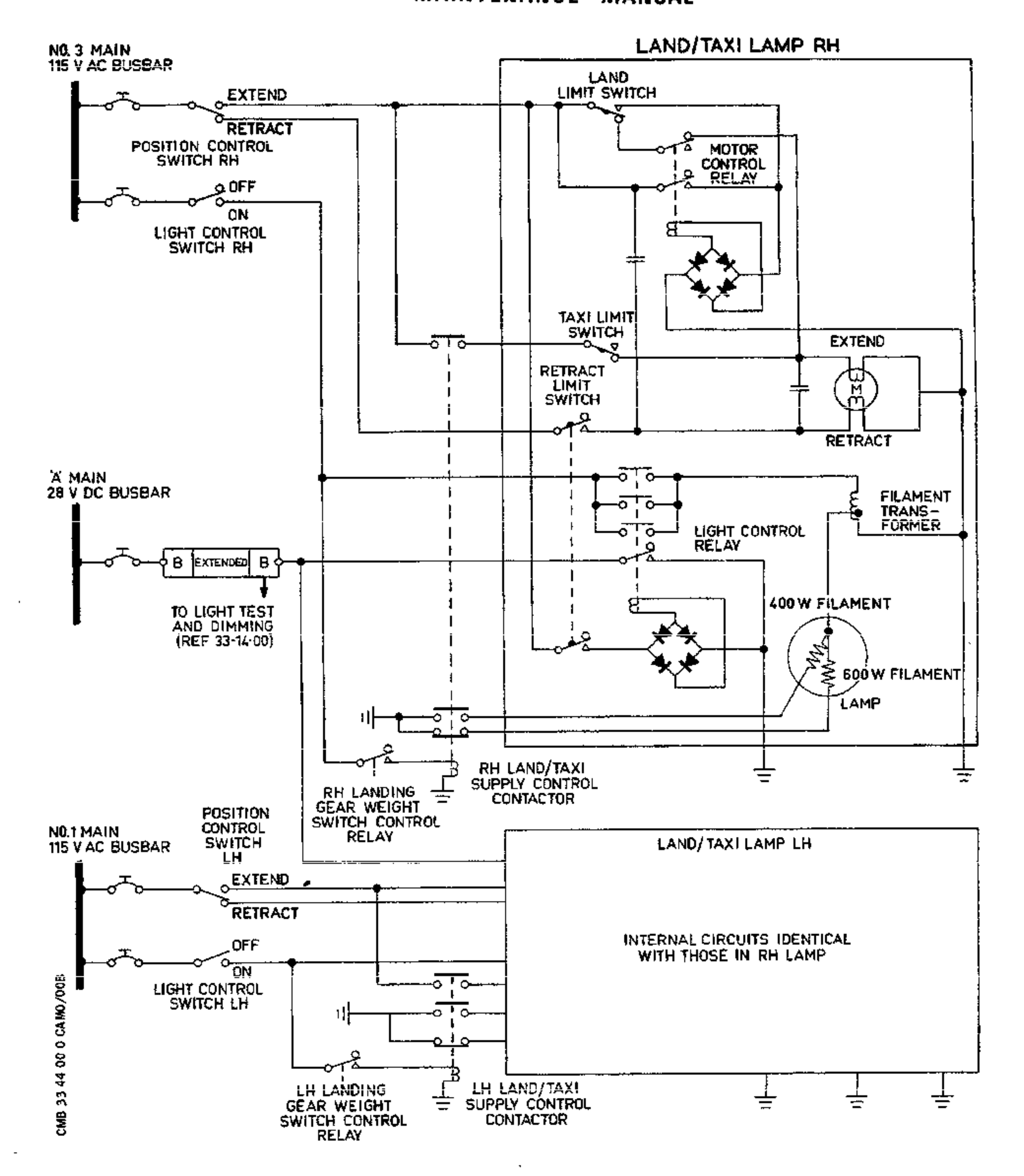
If the position control switch is at EXTEND when blow-back occurs, the hold-on circuit of the motor control relay ensures that the relay remains energized, and therefore the extend windings of the motor remain isolated from the supply. This prevents the lamp from extending and retracting in a 'pumping' action.

To extend the lamp after blowback, it is therefore necessary to move the position control switch to RETRACT to release the hold-on circuit, and then reset the switch to EXTEND.

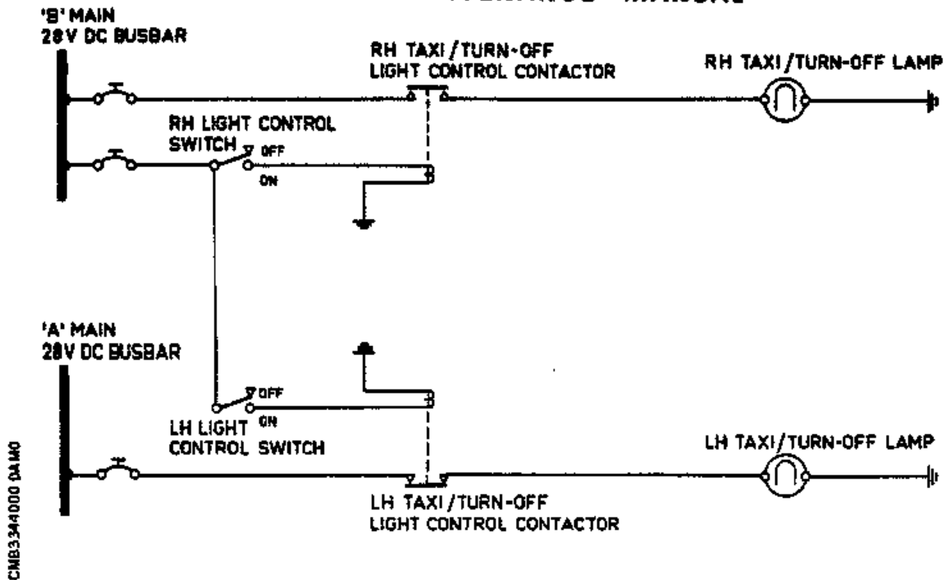
When the taxi/turn-off light control switch is set to ON, a supply is connected to the associated taxi/turn-off light control contactor. The contactor is energized and a supply is connected through a contact to light the taxi/turn-off lamp filament.

7. Electrical Power Supplies

The RH land/taxi lamp is supplied by two separate outputs from No.3 main 115 V a.c. busbar, each supply being fed through separate circuit breakers on panel 13-216. One of



- Land/Taxi Lights - Simplified Schematic
Figure 003



\- Taxi/Turn-off Lights - Simplified Schematic
Figure 004

these outputs also supplies the RH land/taxi supply control contactor.

The LH land/taxi lamp is supplied by two separate outputs from No.1 main 115 V a.c. busbar, each supply being fed through separate circuit breakers on panel 14-215. One of these outputs also supplies the LH land/taxi supply control contactor.

The EXTENDED caption is supplied from 'A' main 28 V d.c. busbar through a circuit breaker on panel 15-215.

The RH taxi/turn-off lamp is supplied from 'B' main 28 V d.c. busbar through a circuit breaker on panel 15-216. The LH taxi/turn-off lamp is supplied from 'A' main 28 V d.c. busbar through a circuit breaker on panel 15-215.

Both taxi/turn-off light control contactors are supplied from 'B' main 28 V d.c. busbar, through a common circuit breaker on panel 15-216.

R

LAND/TAXI AND TURN-OFF LIGHTS - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

CAUTION: DO NOT LEAVE A LAND/TAXI LAMP LIT FOR MORE THAN 5 min IN ANY 10 min PERIOD.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through IF OK and IF NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

The LH and RH land/taxi and turn-off lights circuits are similar, therefore the procedures and charts are applicable to either. Where two identical components are involved, i.e., one in each circuit, both references to the associated components listed in Table 101 are given, e.g., 'Replace Contactor (11) or (12)'.

Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 101).

B. Make available electrical ground power as detailed in 24-41-00.

NOTE: During trouble shooting, the aircraft must be on its wheels with the landing gear weight switches depressed.

3. Trouble Shooting

A. Prepare to trouble shoot (Ref. para.2). Trip CB (6) or (7) and fit a safety clip. As appropriate, set the LH or RH land/taxi lamp light control switch to "ON" and the position control switch to "EXTEND". Check that the associated 600 W lamp filament and the position indicator filaments light when the lamp begins to extend and that the motor cuts out when the lamp is extended to the 'land' position. IF -

NOT OK —

1. Lamp fails to extend to 'land' position - Chart 101.
2. Indicator filaments fail to light - Chart 102.
3. 600 W lamp filament fails to light - Chart 103.

OK

B. Remove safety clip and reset CB (6) or (7) and check that the 600 W filament goes out, the 400 W filament lights and the motor cuts out when the lamp is extended to the 'taxi' position. IF -

NOT OK —

1. 600 W filament fails to go out. Replace lamp assembly.
2. 400 W filament fails to light - Chart 105.
3. Lamp fails to extend to 'taxi' position - Chart 104.

OK

C. As appropriate, set the RH or LH land/taxi position control switch to "RETRACT" and check that the indicator filaments and the lamp filament goes out when the lamp is fully retracted, then set the control switch to "OFF". IF -

- OK → D.
- NOT OK →
  1. Indicator filaments fail to go out - renew lamp assembly.
  2. Lamp filament fails to go out - renew lamp assembly.
  3. Lamp fails to retract fully - Chart 106.

D. As appropriate, set the RH or LH taxi turn-off light control switch to "ON". Check that the associated turn-off lamp lights. IF -

- NOT OK →
  1. Lamp fails to light - Chart 107.

LAND/TAXI LAMP FAILS TO EXTEND TO 'LAND' POSITION WHEN POSITION CONTROL SWITCH IS AT 'EXTEND'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

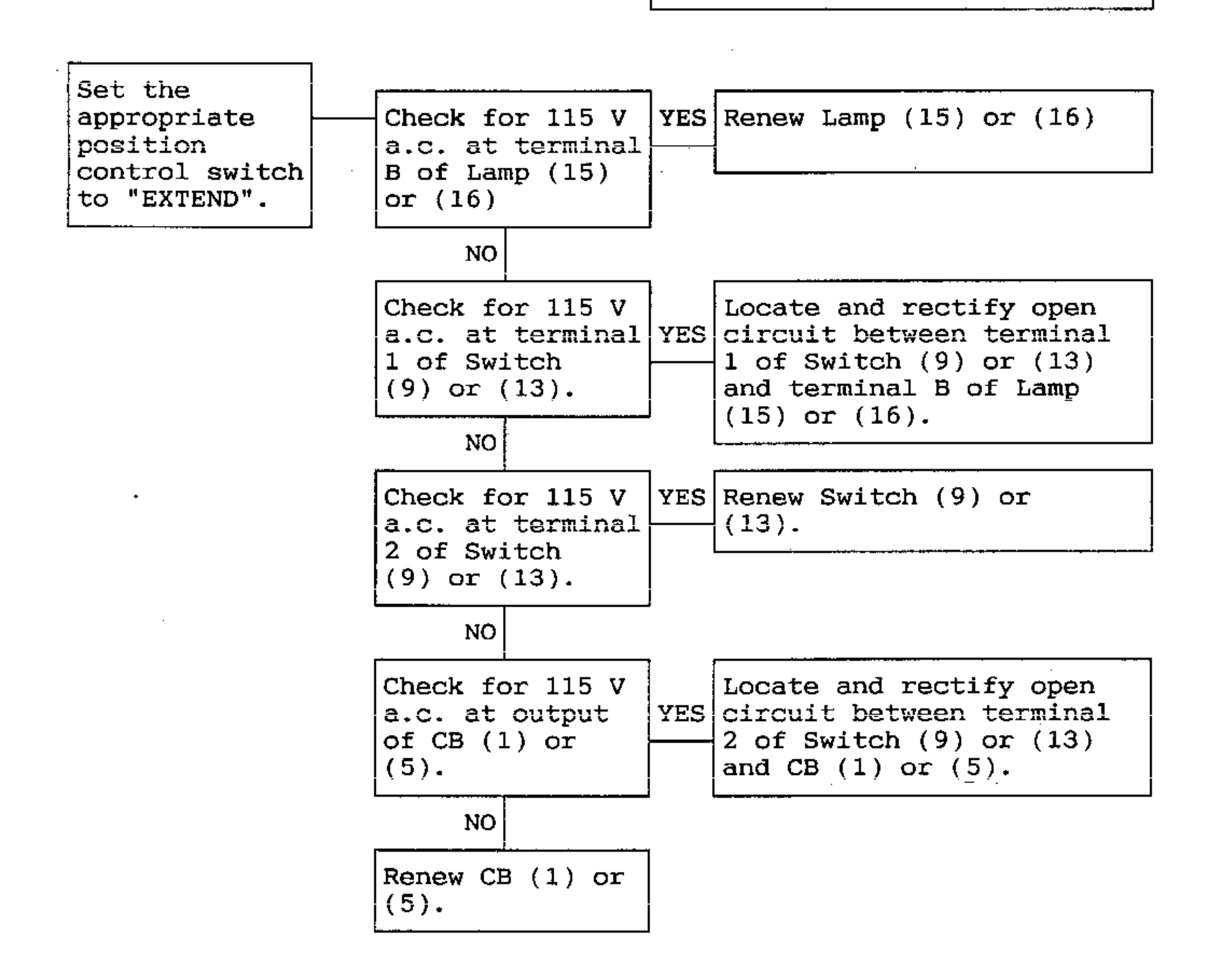


Chart 101

INDICATOR FILAMENTS FAIL TO LIGHT WHEN THE APPROPRIATE LH OR RH LAMP POSITION CONTROL SWITCH IS AT 'EXTEND'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

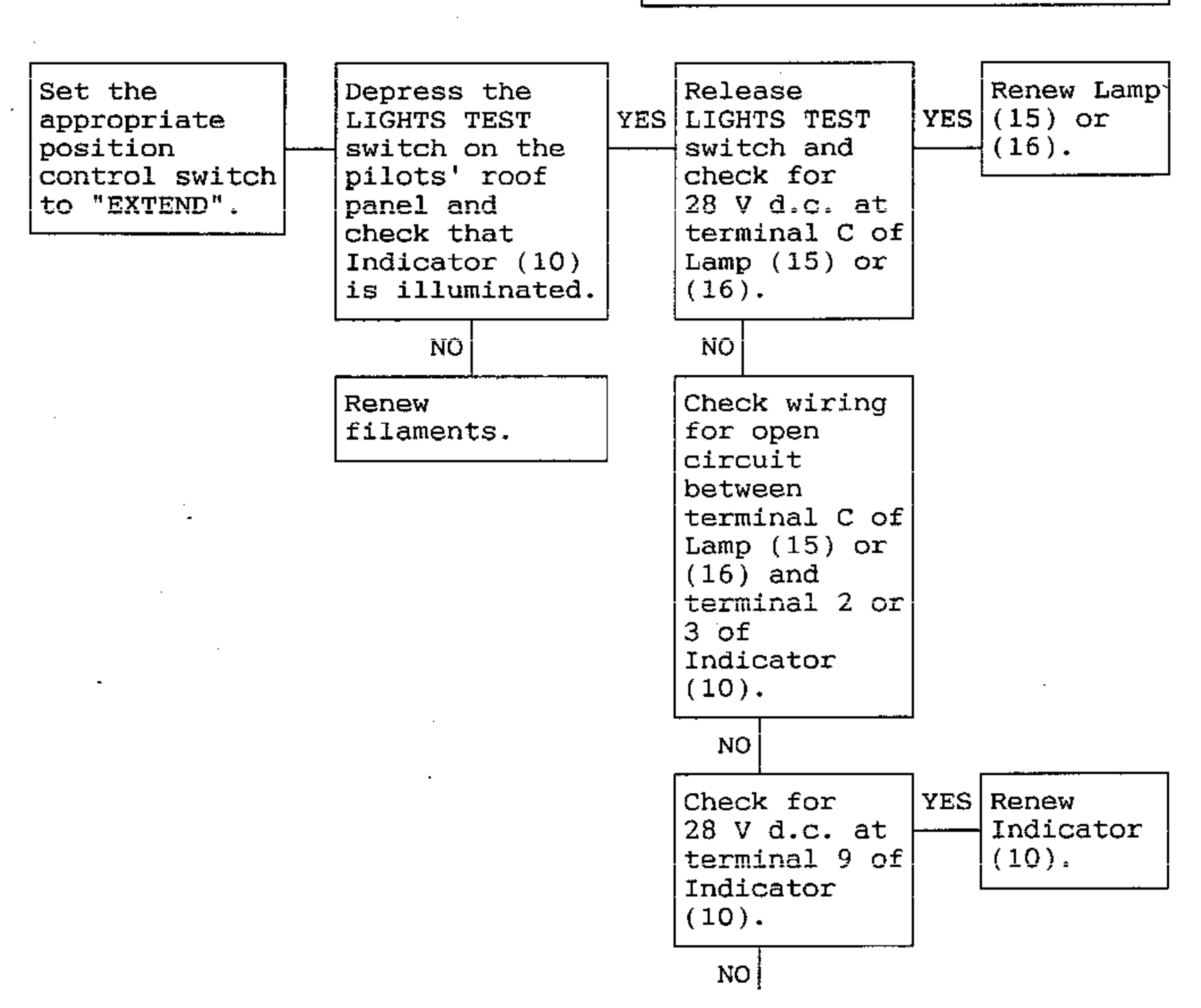


Chart 102 (Sheet 1 of 2)

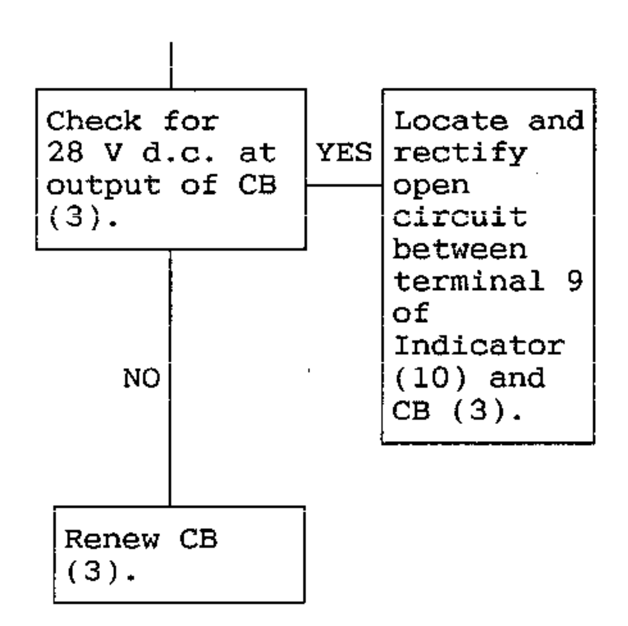


Chart 102 (Sheet 2 of 2)

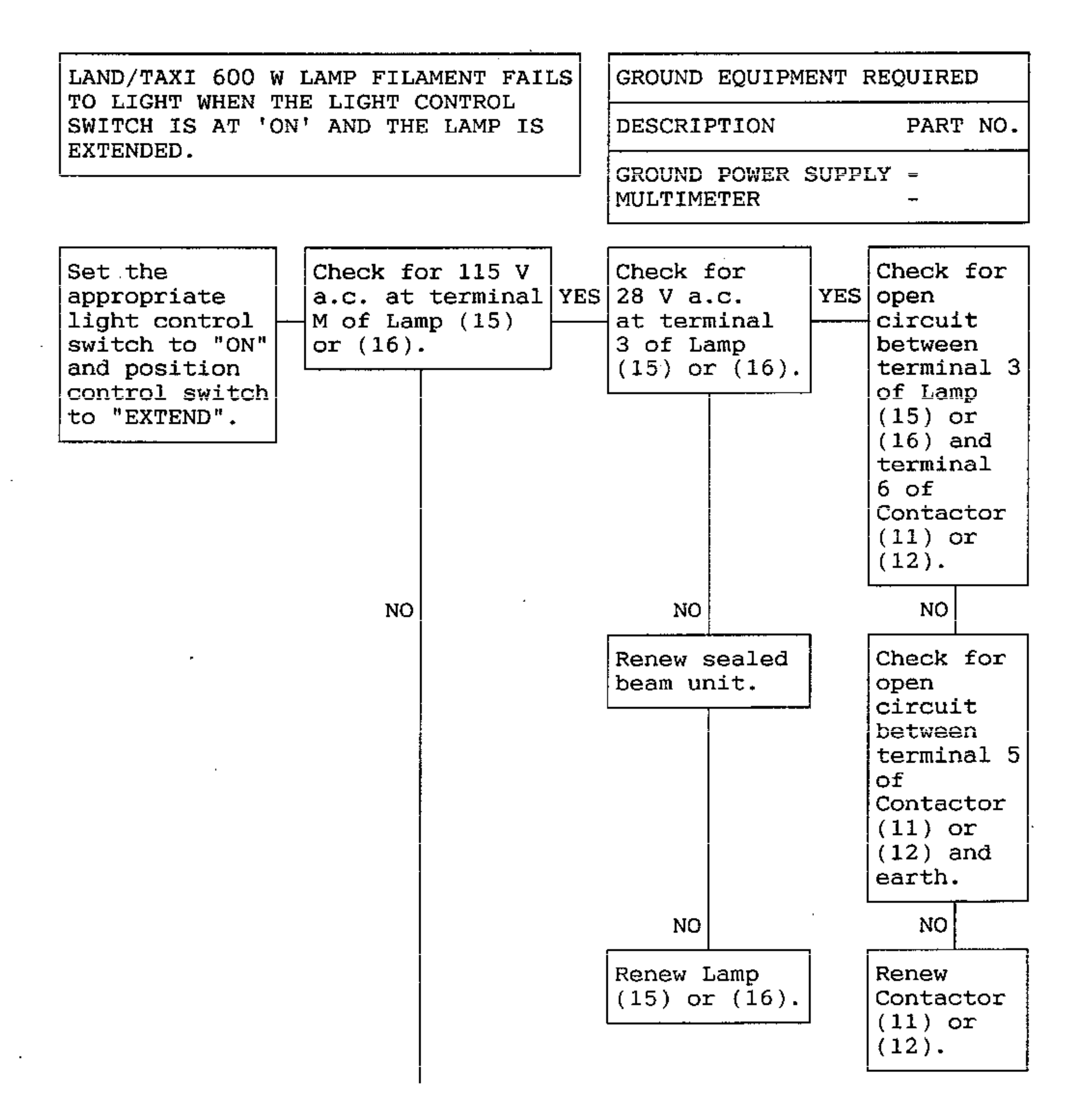


Chart 103 (Sheet 1 of 2)

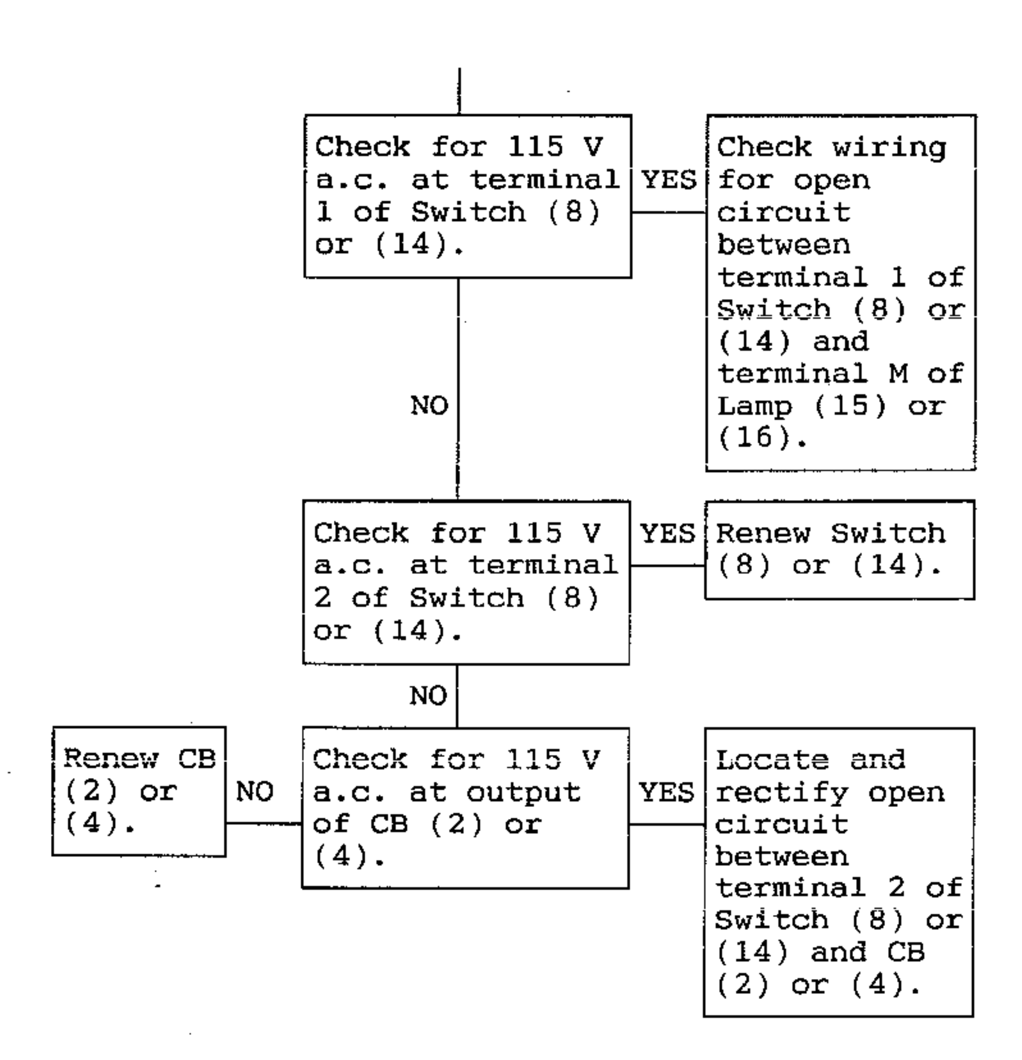


Chart 103 (Sheet 2 of 2)

LAND/TAXI LAMP FAILS TO EXTEND TO 'TAXI' POSITION WHEN POSITION CONTROL SWITCH IS AT 'EXTEND' AND CIRCUIT BREAKERS (6) AND (7) ARE RESET.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

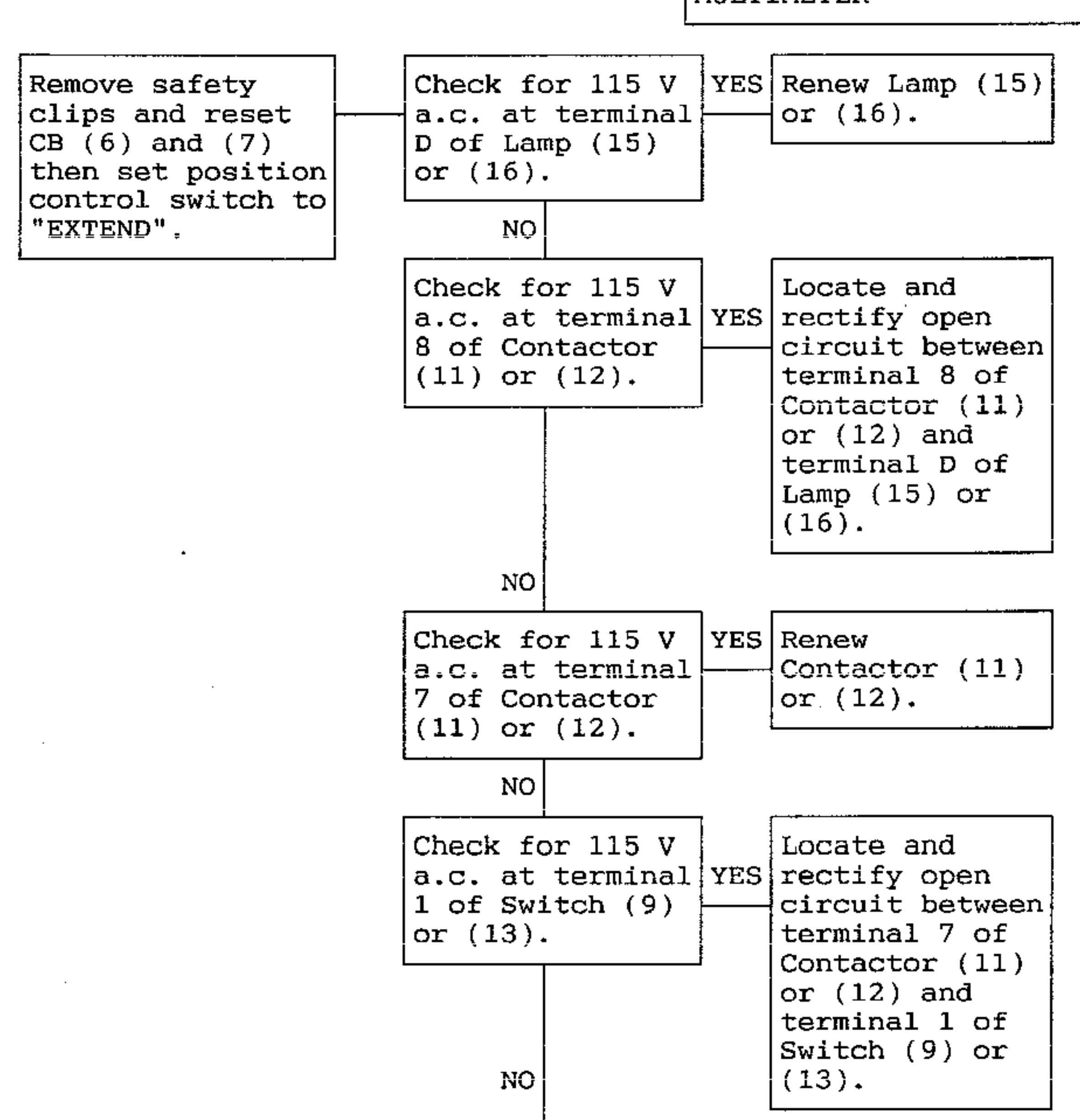


Chart 104 (Sheet 1 of 2)

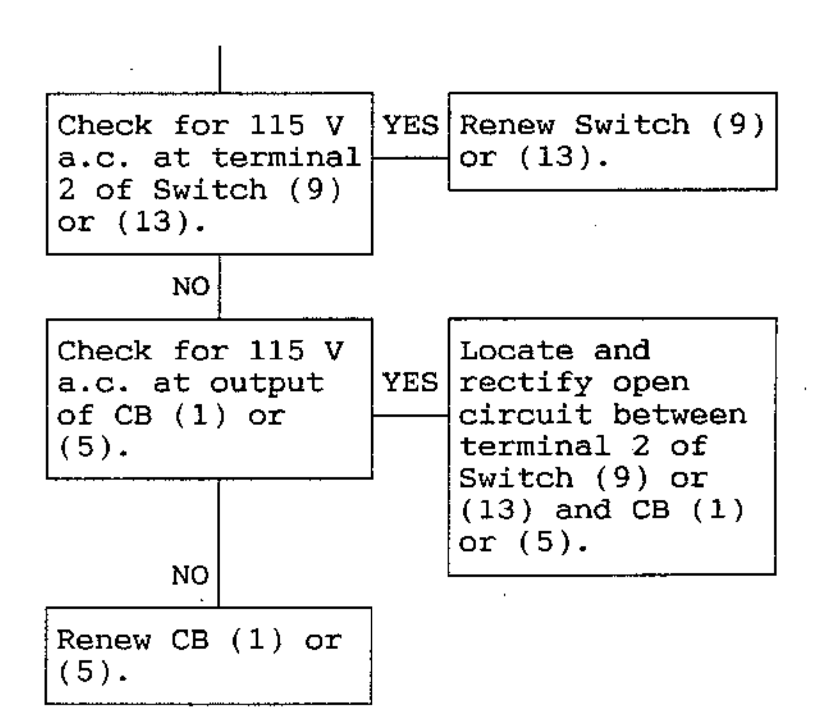


Chart 104 (Sheet 2 of 2)

LAND/TAXI 400 W LAMP FILAMENT FAILS TO LIGHT WHEN THE LIGHT CONTROL SWITCH IS AT 'ON' AND THE LAMP IS EXTENDED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

Set the appropriate light control switch to "ON" and position control switch to "EXTEND".

Check for 115 V a.c. at terminal M of Lamp (15) or (16).

YES: Check for 28 V a.c. at terminal 2 of Lamp (15) or (16).

NO (to 115 V check): continued on Sheet 2.

YES: Check for open circuit between terminal 2 of Lamp (15) or (16) and terminal 4 of Contactor (11) or (12).

NO (to 28 V check): Renew sealed beam unit.

NO: Renew Lamp (15) or (16) and re-test.

NO (to open circuit check terminal 2/terminal 4): Check for open circuit between terminal 3 of Contactor (11) or (12) and earth.

NO: Renew Contactor (11) or (12).

Chart 105 (Sheet 1 of 2)

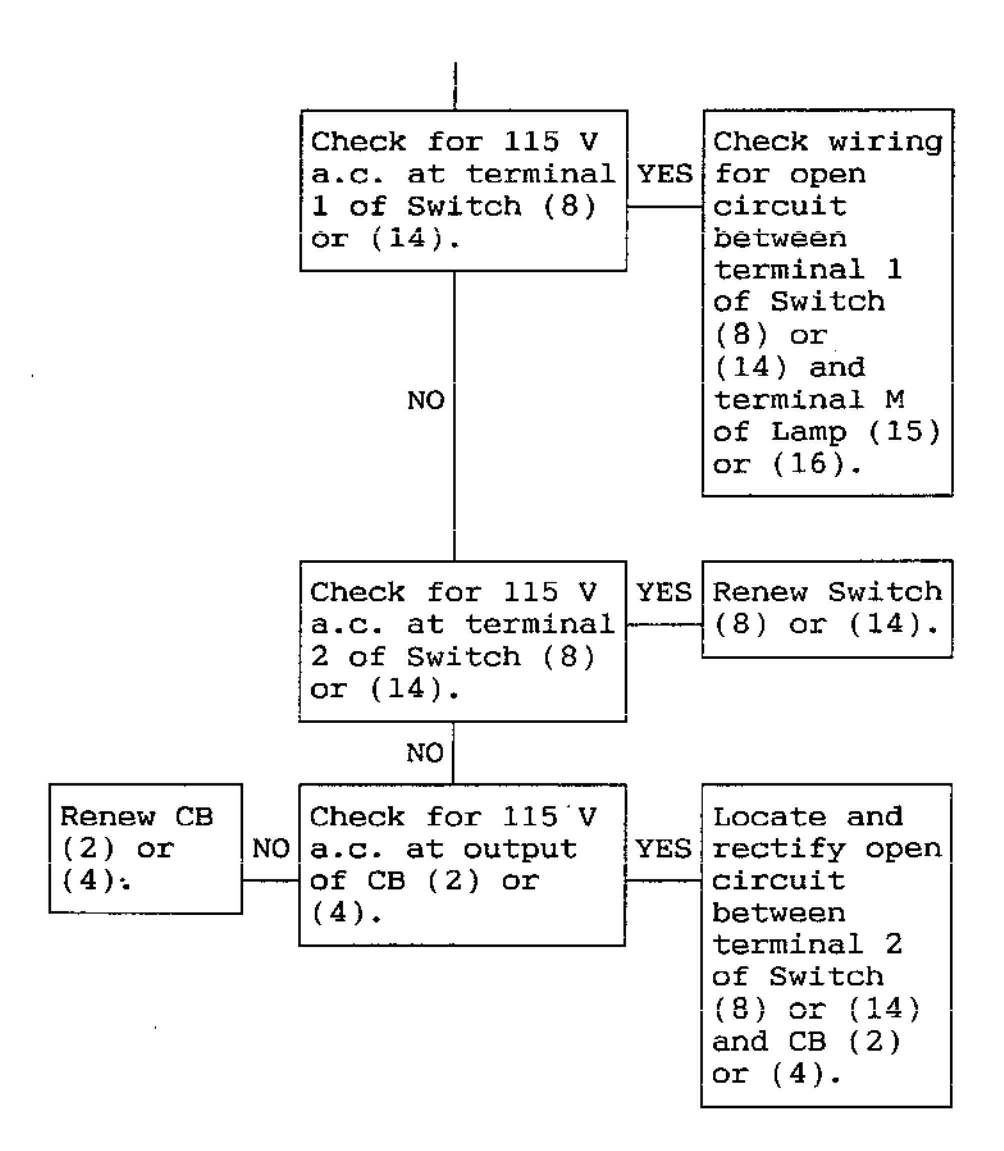


Chart 105 (Sheet 2 of 2)

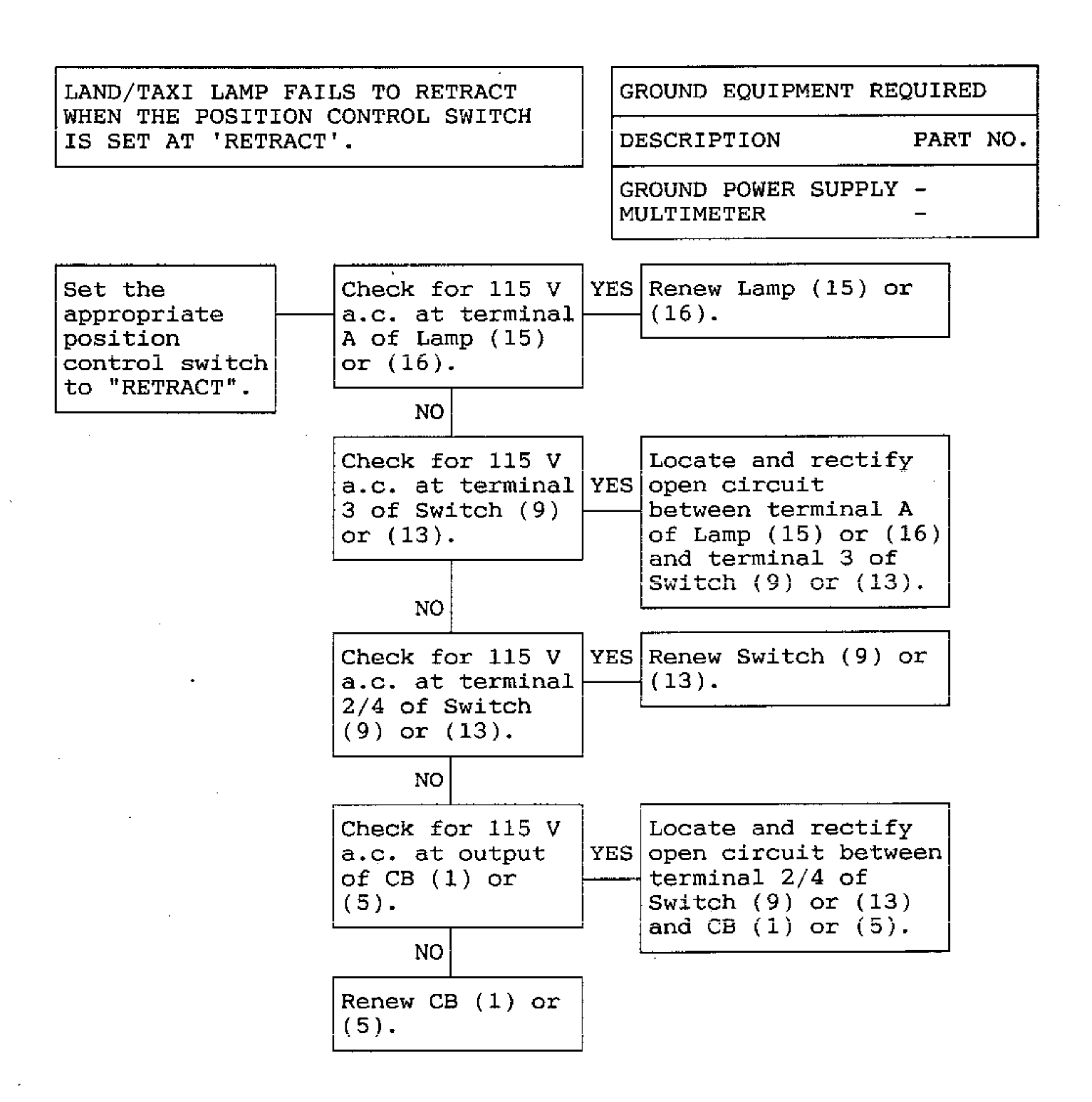

LAND/TAXI LAMP FAILS TO RETRACT WHEN THE POSITION CONTROL SWITCH IS SET AT 'RETRACT'.
GROUND EQUIPMENT REQUIRED
DESCRIPTION
PART NO.
GROUND POWER SUPPLY -
MULTIMETER -
Set the appropriate position control switch to "RETRACT".
Check for 115 V a.c. at terminal A of Lamp (15) or (16).
YES
Renew Lamp (15) or (16).
NO
Check for 115 V a.c. at terminal 3 of Switch (9) or (13).
YES
Locate and rectify open circuit between terminal A of Lamp (15) or (16) and terminal 3 of Switch (9) or (13).
NO
Check for 115 V a.c. at terminal 2/4 of Switch (9) or (13).
YES
Renew Switch (9) or (13).
NO
Check for 115 V a.c. at output of CB (1) or (5).
YES
Locate and rectify open circuit between terminal 2/4 of Switch (9) or (13) and CB (1) or (5).
NO
Renew CB (1) or (5).

Chart 106

TURN-OFF LAMP FAILS TO LIGHT WHEN CONTROL SWITCH IS SET AT 'ON'.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-

Set the appropriate turn-off lamp control switch to "ON".

Check for 28 V d.c. at terminal 1 of Lamp (24) or (25).

YES: Renew filament in Lamp (24) or (25).

NO: Check for 28 V d.c. at terminal L1 of Contactor (22) or (23).

YES: Locate and rectify open circuit between terminal 1 of Lamp (24) or (25) and L1 of Contactor (22) or (23).

NO: Check for 28 V d.c. at terminal A of Contactor (22) or (23).

YES: Check for 28 V d.c. at terminal X1 of Contactor (22) or (23).

YES: Renew Contactor (22) or (23).

NO

NO

Chart 107 (Sheet 1 of 2)

Locate and rectify open circuit between terminal A of Contactor (22) or (23) and terminal 2 of CB (17) or (19).

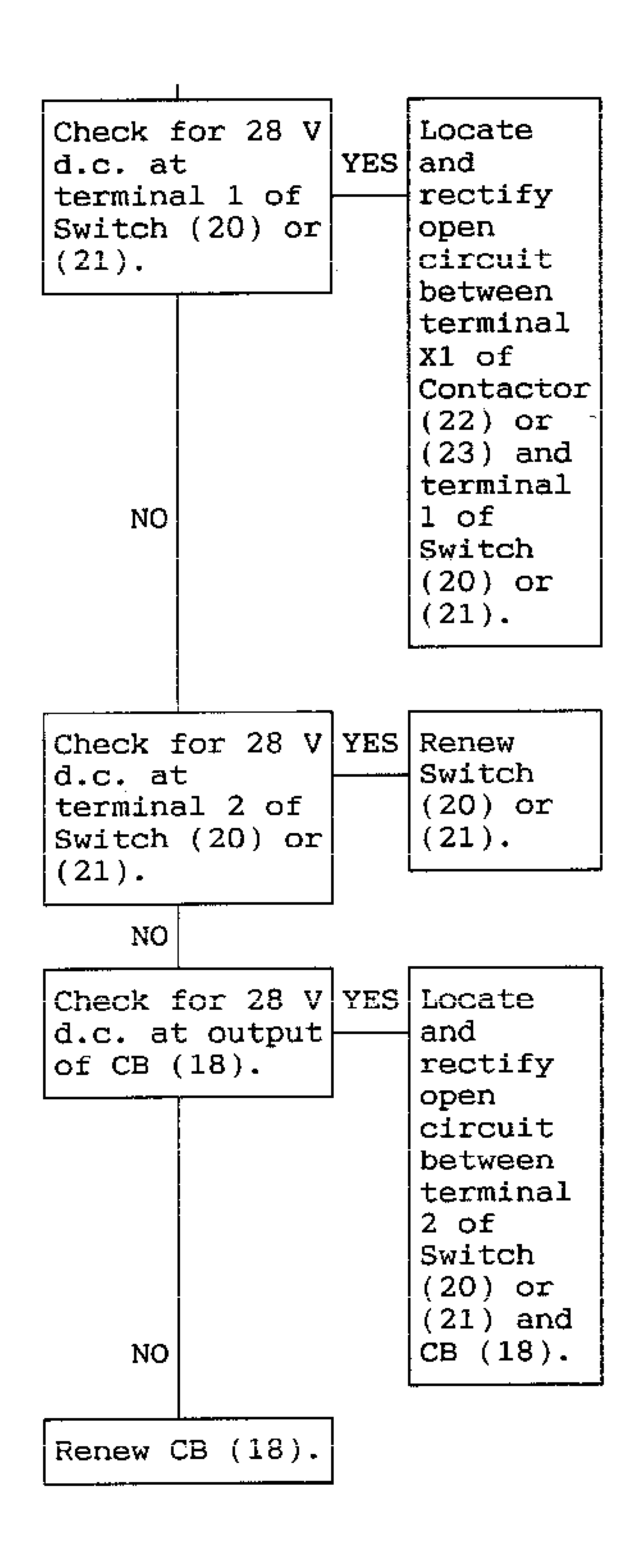


Chart 107 (Sheet 2 of 2)

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(1) Circuit breaker 115 V	-	13-216	L42	Map ref.B9	24-50-00 R/I	
(2) Circuit breaker 115 V	-	13-216	L46	Map ref.B8	24-50-00 R/I	
(3) Circuit breaker 28 V	-	15-215	L43	Map ref.A13	24-50-00 R/I	
(4) Circuit breaker 115 V	-	14-215	L45	Map ref.E10	24-50-00 R/I	
(5) Circuit breaker 115 V	-	14-215	L41	Map ref.E11	24-50-00 R/I	
(6) Circuit breaker 28 V	-	3-213	G293	Map ref.B8	24-50-00 R/I	
(7) Circuit breaker 28 V	-	3-213	G294	Map ref.B9	24-50-00 R/I	
(8) RH land/ taxi light control switch	-	4-211	L52	Pilots' roof panel	33-44-00 R/I	
(9) RH land/ taxi position control switch	-	4-211	L53	Pilots' roof panel	33-44-00 R/I	
(10) Position indicator	-	4-211	L49	Pilots' roof panel	33-44-00 R/I	
(11) RH supply control contactor	-	10-123	L57	Underfloor racking	33-44-00 R/I	
(12) LH supply control contactor	-	10-123	L56	Underfloor racking	33-44-00 R/I	
(13) LH land/ taxi position control switch	-	4-211	L50	Pilots' roof panel	33-44-00 R/I	

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
(14) LH land/ taxi light control switch	-	4-211	L51	Pilots' roof panel	33-44-00 R/I	
(15) RH land/ taxi lamp	-	128	L61	RH nosewheel door	33-44-00 R/I	
(16) LH land/ taxi lamp	-	127	L60	LH nosewheel door	33-44-00 R/I	
(17) Circuit breaker 28 V	-	15-216	L48	Map ref.B12	24-50-00 R/I	
(18) Circuit breaker 28 V	-	15-216	L44	Map ref.B13	24-50-00 R/I	
(19) Circuit breaker 28 V	-	15-215	L47	Map ref.A14	24-50-00 R/I	
(20) RH taxi turn-off light control switch	-	4-211	L55	Pilots' roof panel	33-44-00 R/I	
(21) LH taxi turn-off light control switch	-	4-211	L54	Pilots' roof panel	33-44-00 R/I	
(22) RH light control contactor	-	1-123	L59	Underfloor racking	33-44-00 R/I	
(23) LH light control contactor	-	1-123	L58	Underfloor racking	33-44-00 R/I	
(24) RH turn-off lamp	-	122	L63		33-44-00 R/I	
(25) LH turn-off lamp	-	121	L62		33-44-00 R/I	

Component Identification
Table 101

LAND/TAXI AND TURN-OFF LIGHTS - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains instructions for the removal and installation of the light control contactors associated with the land/taxi and turn-off lights. These contactors are located in the forward underfloor racking.

Instructions for the removal and installation of associated control switches and the EXTENDED caption light module, mounted on the flight compartment roof panel, are contained in 33-00-00.

2. Land/Taxi Light Control Contactor (Ref. Fig. 401)

A. Equipment and Materials

R

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

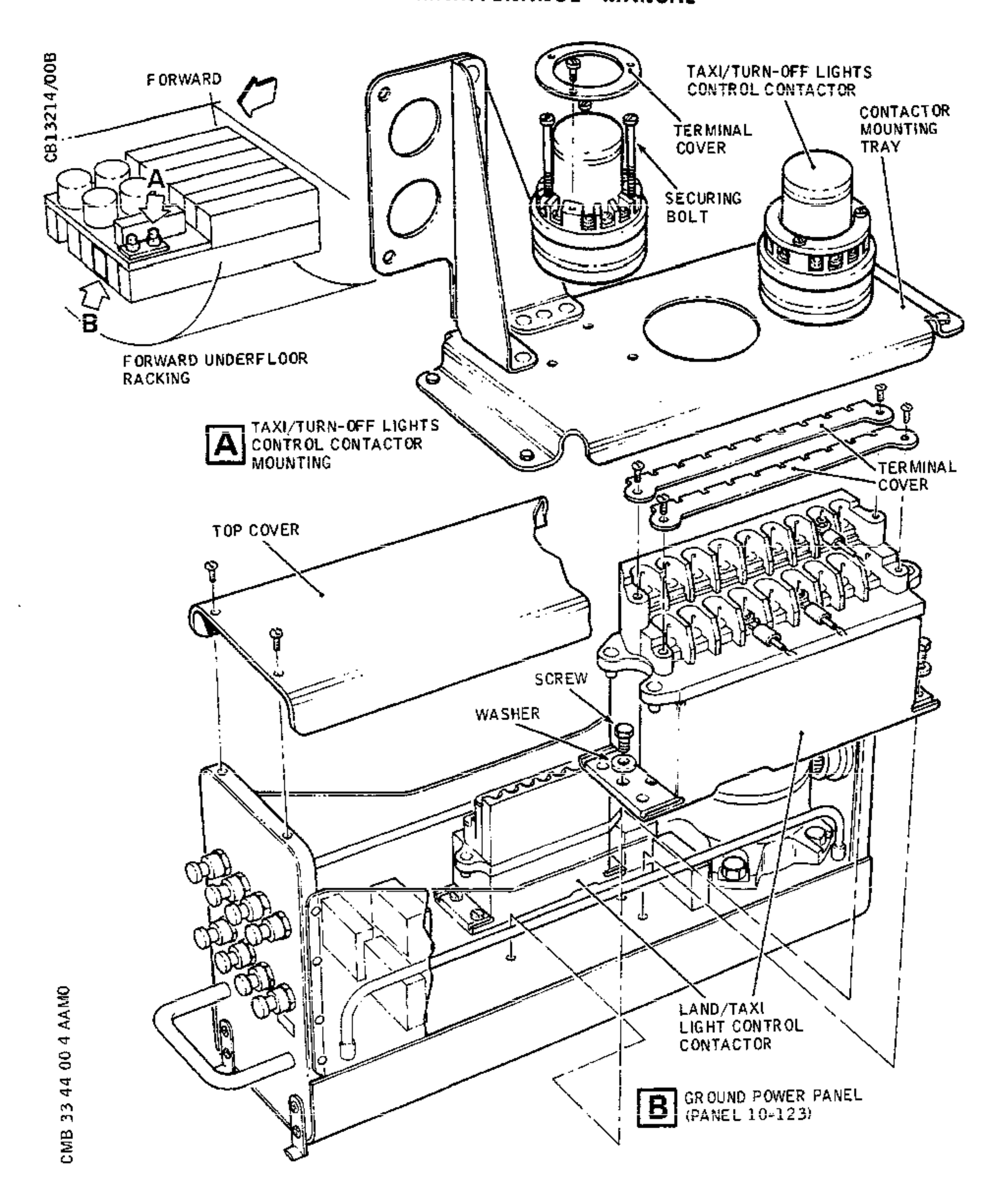
R
R
R

B. Prepare

(1) Ensure that the LANDING/TAXI light control switches and the EXTEND - RETRACT position control switches, on the flight compartment roof panel, are at OFF and RETRACT respectively.

(2) Trip the circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG/TAXI LT CONT	13-216	L42	B9
RH LDG/TAXI LT SUP	13-216	L46	B8
RH LDG/TAXI CONT	14-215	L41	E11
GRND POWER LTS SUP	25-216	X369	B9



R - Control Contactors - Installation
Figure 401

(3) Open service compartment door 123 AB (Ref. 52-41-11) to gain access to the land/taxi light control contactor in the ground power panel, 10-123, mounted in the forward underfloor racking.

C. Remove

(1) Release the hold-down fasteners from the ground power panel hold-down hooks.

(2) Withdraw the panel from the rack sufficiently to gain access to the quick-release cable clamps on top of the panel.

(3) Release the cable clamps and remove the cables from the top of the panel.

(4) Withdraw the panel clear of the rack and lower the panel on to a suitable support.

(5) Remove the screws securing the top cover to the panel and remove the cover.

(6) Remove the terminal covers from the contactor.

(7) Disconnect the electrical cables from the contactor terminals.

(8) Refit the terminal covers to the contactor.

(9) Remove the screws and washers securing the contactor to its mounting and lift the contactor from the panel.

D. Install

(1) Comply with the electrical safety precautions.

(2) Place the contactor on its mounting in the ground power panel and secure it with the screws and washers.

(3) Remove the contactor terminal covers.

(4) Connect the electrical cables to the terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(5) Refit the terminal covers to the contactor.

(6) Fit the top cover to the panel and secure it with the screws.

(7) Mount the panel on the end of the rack support rails and secure the cables to the top of the panel with the quick-release cable clamps.

(8) Slide the panel into the racking and secure it with the hold-down fasteners.

(9) Check that the panel is bonded in accordance with 20-27-11.

E. Conclusion

(1) Remove the safety clips and reset the circuit breakers tripped before removal.

(2) Carry out an Operational Test of the land/taxi lights as detailed in Adjustment/Test.

(3) Close and secure service compartment door 123 AB (Ref. 52-41-11).

3. Taxi/Turn-off Lights Control Contactor (Ref. Fig. 401)

A. Equipment and Materials

R

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

R
R
R

B. Prepare

(1) Ensure that the TAXI TURN light control switches on the flight compartment roof panel are at OFF.

(2) Trip the circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
TAXI/TURN OFF LTS CONT	15-216	L44	B13
RH TAXI/TURN OFF LT SUP	15-216	L48	B12

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH TAXI/TURN OFF LT SUP	15-215	L47	A14

(3) Open service compartment door 123 AB (Ref. 52-41-11) to gain access to the taxi/turn-off light control contactor mounted on the forward underfloor racking structure.

C. Remove

(1) Remove the terminal cover from the contactor.

(2) Disconnect the electrical cables from the contactor terminals.

R (3) Remove the bolts securing the contactor to the
R mounting tray and lift the contactor clear of the
R structure.

R (4) Refit the terminal cover to the contactor.
R

D. Install

(1) Comply with the electrical safety precautions.

R (2) Remove the contactor terminal cover.

R (3) Fit the contactor on the mounting tray and
R secure it with the bolts.

R (4) Check that the contactor is bonded to the tray in accordance with 20-27-11.

R
R (5) Connect the electrical cables to the contactor terminals, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

R (6) Refit the terminal cover to the contactor.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) Set the appropriate left or right TAXI TURN light control switch to "ON" and check that the associated taxi/turn-off lamp is lit. Return the switch to "OFF".

(4) Close and secure service compartment door 123 AB (Ref. 52-41-00).

(5) Switch off and disconnect electrical ground power as detailed in 24-41-00.

LAND/TAXI AND TURN-OFF LIGHTS - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

This topic contains an Operational Test only, which details the procedure to prove the correct operation of the land/taxi and turn-off lights. Functional and System Tests are not considered necessary in this application.

2. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

C. Test Land/Taxi Lights

NOTE: For this test the aircraft must be on its wheels with the landing gear weight switches depressed.

(1) Depress the LIGHTS TEST switch on the pilots' roof panel and check that the land/taxi lights EXTENDED caption is illuminated.

(2) Release the switch and check that the caption is extinguished.

CAUTION: SUBSEQUENT TEST PROCEDURES REQUIRE THE TRIPPING OF CIRCUIT BREAKERS, TO ESTABLISH LEFT-HAND AND RIGHT-HAND WEIGHT SWITCH OPERATED RELAYS IN THE 'IN-FLIGHT' POSITION. CARE MUST BE TAKEN TO ENSURE THAT ALL SERVICES ADVERSELY AFFECTED BY THIS CONDITION ARE PREVIOUSLY ISOLATED. (REF. 7-11-00).

DO NOT LEAVE THE LAND/TAXI LAMP LIT FOR MORE THAN 5 min IN ANY 10 min PERIOD.

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R (3) Trip the LH UC WEIGHT SW 'A' SYS SUP circuit breaker G292, on panel 1-213, map ref.M17, and the RH UC WEIGHT SW 'B' SYS SUP circuit breaker G294, on panel 3-213, map ref.B9, and fit safety clips. This de-energizes the associated weight switch relays thus simulating flight conditions. Ensure that all services adversely affected by this condition are isolated.

(4) Set the LH LANDING TAXI LIGHTS switch to "ON" and check that the land/taxi lamp is not lit.

(5) Set the LH LANDING TAXI LIGHTS - RETRACT - EXTEND switch to "EXTEND".

(6) Check that, as the LH land/taxi lamp commences to extend, the 600 W filament is lit and the EXTENDED caption is illuminated.

(7) Check that the lamp travels to the landing position and that the motor cuts out.

(8) Set the LH LANDING TAXI LIGHTS switch to "OFF" and check that the lamp is not lit.

(9) Return the switch to ON and check that the 600 W filament is again lit.

(10) Remove the circuit breaker safety clip and reset
R circuit breaker G292. Check that -

(a) the 600 W filament is extinguished,

(b) the 400 W filament is lit,

(c) the lamp extends to the taxi position,

(d) the motor then cuts out and

(e) the EXTENDED caption remains illuminated.

(11) Set the LH LANDING TAXI LIGHTS switch to "OFF" and check that the LH land/taxi lamp is not lit.

(12) Return the switch to "ON" and check that the 400 W filament is again lit.

(13) Set the LH LANDING TAXI LIGHTS - RETRACT - EXTEND switch to "RETRACT".

(14) Check that the LH lamp travels to its fully

R retracted position and that during the initial
R retract sequence -

(a) the light goes out,

R (b) the EXTENDED caption is extinguished and

R (c) in the fully retracted position the motor cuts
R out.

(15) Set the LH LANDING TAXI LIGHTS switch to "OFF".

(16) Repeat operations (4) to (15) inclusive, substituting the RH switches and lamp and, in operation (10), resetting circuit breaker
R G294 in place of G292.

(17) Ensure that the weight switch relay controlled services, isolated in accordance with the requirements of operation (3), are reinstated as required.

D. Test Turn-off Lights

(1) On the pilots' roof panel, operate the left-hand TAXI TURN LIGHTS switch to "ON" and check that the left taxi turn-off lamp is lit.

(2) Return the switch to "OFF" and check that the light is extinguished.

(3) Operate the right-hand TAXI TURN LIGHTS switch to "ON" and check that the right taxi turn-off lamp is lit.

(4) Return the switch to "OFF" and check that the light is extinguished.

E. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

LAND/TAXI LIGHT - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

This topic contains instructions for the renewal of a land/taxi lamp glass cover (lens) and the renewal of a sealed beam unit, and for the removal and installation of a land/taxi lamp assembly.

Two land/taxi lamps are fitted, one in each of the main door assemblies of the nose landing gear bay. The back of each lamp is protected by a cover which, in turn, is fitted with a plug access cover.

Renewal of a glass cover and a sealed beam unit is normally carried out with the lamp retracted, but can be carried out with the lamp in the extended position if necessary. Removal and installation of the lamp assembly can be conducted only with the nose landing gear bay doors open.

2. Lens (Ref. Fig. 401)

A. Renew

(1) Support the glass cover and remove the three screws securing the glass cover to the lamp inner assembly. Remove the glass cover and the retaining ring from the lamp, taking care that the sealed beam unit does not fall from its housing.

R CAUTION: ENSURE THAT THE SEALED BEAM UNIT IS
R CORRECTLY ORIENTATED AND POSITIONED IN
R ITS HOUSING BEFORE FITTING THE RETAINING
R RING AND GLASS COVER TO THE LAMP, OTHERWISE
R DAMAGE MAY BE CAUSED TO THE LAMP INNER
R ASSEMBLY AND THE SEALED BEAM UNIT.

(2) Ensure that the sealed beam unit is correctly positioned in its housing, with the word TOP, stencilled on the glass face, located toward the drive assembly, i.e., toward the front of the aircraft when the lamp is installed, and the locating lug, on the side of the sealed beam unit, correctly seated in the adjustment bracket within the lamp housing.

(3) Press the sealed beam unit inward against the pressure springs, maintain the pressure and refit

the retaining ring and glass cover to the lamp and secure the glass cover with the screws.

3. Sealed Beam Unit - Renewal (Ref. Fig. 401)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the LANDING TAXI light control switch is at OFF.

(2) Trip the associated circuit breakers listed below and fit safety clips.

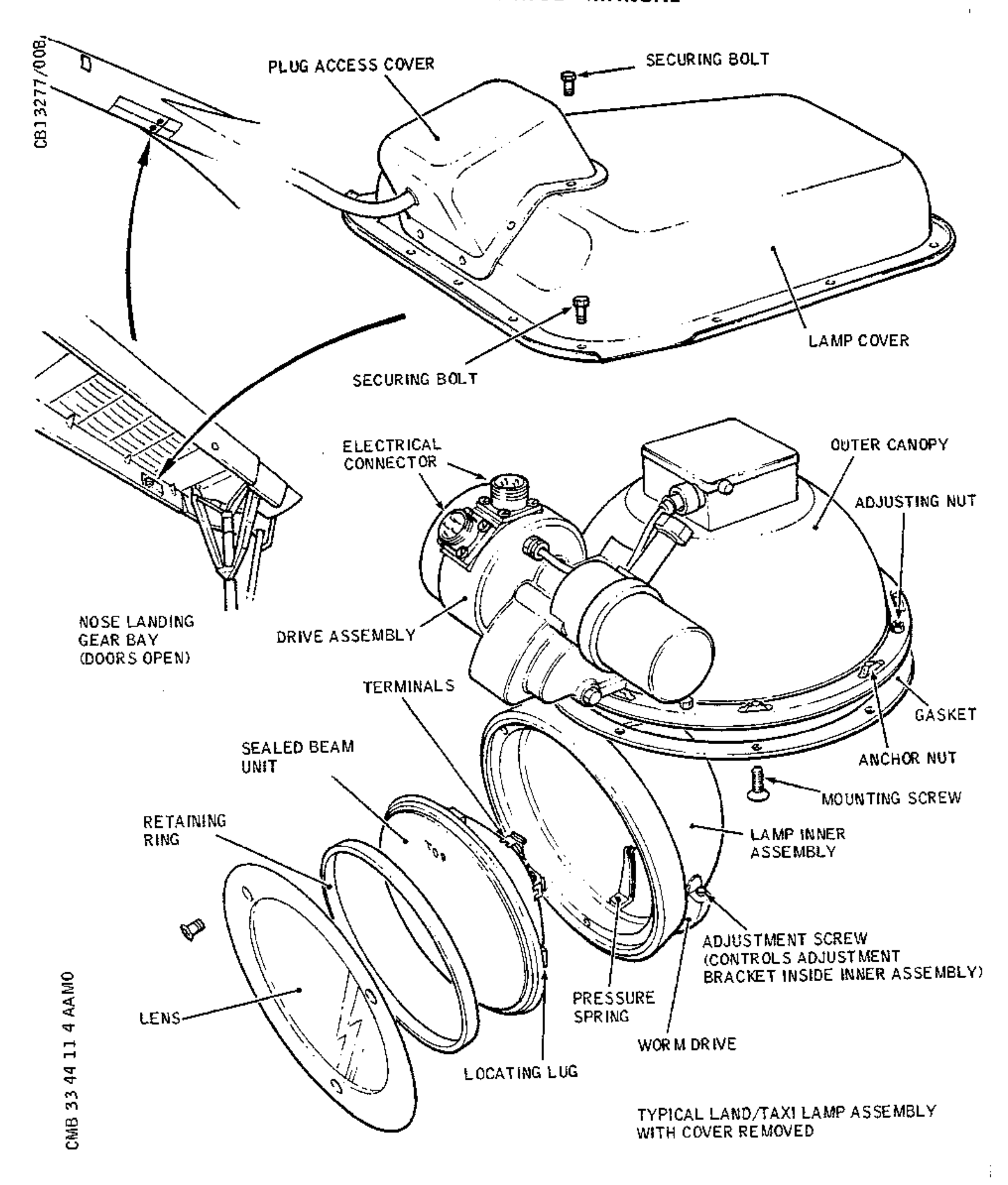
SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG/TAXI LT SUP	13-216	L46	B8
RH LDG/TAXI LT CONT	13-216	L42	B9
LH LDG/TAXI LT SUP	14-215	L45	E10
LH LDG/TAXI LT CONT	14-215	L41	E11

C. Renew

(1) Support the lamp glass cover and remove the screws securing the glass cover to the lamp inner assembly. Remove the glass cover and the retaining ring from the lamp.

(2) Withdraw the sealed beam unit from the lamp inner assembly sufficiently to gain access to the electrical cables.

(3) Label the electrical cables to assist identification for reconnection. Disconnect the electrical cables from the terminals on the sealed beam unit.



R - Land/Taxi Lamp Assembly - Installation
Figure 401

(4) Remove the sealed beam unit.

R CAUTION: ENSURE THAT THE SEALED BEAM UNIT IS
R CORRECTLY ORIENTATED AND POSITIONED IN
R ITS HOUSING BEFORE FITTING THE RETAINING
R RING AND GLASS COVER TO THE LAMP, OTHERWISE
R DAMAGE MAY BE CAUSED TO THE LAMP INNER
R ASSEMBLY AND THE SEALED BEAM UNIT.

(5) Support the replacement unit and connect the electrical cables to the terminals, ensuring that the connections are made in accordance with the cable identifications.

(6) Orientate the sealed beam unit until the word TOP, stencilled on the glass face, is located toward the lamp drive assembly, i.e., toward the front of the aircraft when the lamp is installed.

(7) Insert the sealed beam unit into its housing in the lamp inner assembly and manipulate the unit until the locating lug is seated in the adjustment bracket within the housing.

(8) Press the sealed beam unit inward against the pressure springs, sustain pressure and refit the retaining ring and glass cover to the lamp and secure the glass cover with the screws.

D. Conclusion

(1) Rmove the safety clips and reset the circuit breakers tripped before renewal.

(2) Carry out an Operational Test of the land/taxi lights as detailed in 33-44-00, Adjustment/Test, followed by a Beam Alignment Test as detailed in 33-44-11, Adjustment/Test.

3. Land/Taxi Lamp - Removal/Installation (Ref. Fig. 401)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Open the nose landing gear bay doors (Ref. Chap.32).

(2) Ensure that the LANDING TAXI light control and position control switches are at OFF and RETRACT respectively.

(3) Trip the LDG/TAXI LTS POSN IND circuit breaker L43 on panel 15-215, map ref.A13, and fit a safety clip.

(4) Trip the associated circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG/TAXI LT SUP	13-216	L46	B8
RH LDG/TAXI LT CONT	13-216	L42	B9
LH LDG/TAXI LT SUP	14-215	L45	E10
LH LDG/TAXI LT CONT	14-215	L41	E11

C. Remove

(1) Remove the bolts securing the plug access cover and slide it back on the electrical cable to gain access to the electrical connectors.

(2) Disconnect the lamp assembly electrical connectors.

(3) Remove the bolts securing the lamp cover to the door and remove the cover from the lamp.

(4) Support the lamp assembly. Remove the screws around the periphery of the lamp outer canopy and lift the
R lamp, together with the gasket, from the door.

D. Install

(1) Comply with the electrical safety precautions.

(2) Orientate the lamp assembly so that the drive mechanism is located toward the front of the aircraft.

R (3) Fit the lamp assembly,together with the gasket,

to its mounting on the nose landing gear bay door and secure the outer canopy to the door with the eight mounting screws, ensuring that the three horizontal adjusting nuts and bolts are in position and tight.

(4) Check that the lamp is bonded in accordance with 20-27-11.

(5) Place the lamp cover over the lamp and secure the cover to the door with the bolts.

(6) Connect the electrical connectors to the lamp assembly, ensuring that the mating surfaces are clean and undamaged.

(7) Fit the plug access cover to the lamp cover and secure it with the bolts.

E. Conclusion

(1) Close the nose landing gear bay doors (Ref. Chap.32).

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

(3) Carry out an Operational Test of the land/taxi lights as detailed in 33-44-00, Adjustment/Test, followed by a Beam Alignment Test as detailed in 33-44-11, Adjustment/Test.

LAND/TAXI LIGHT - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

CAUTION: THE LAND/TAXI LAMPS MUST NOT REMAIN ON FOR PERIODS GREATER THAN 20 min. EACH SUCH PERIOD MUST BE FOLLOWED BY A 45 min REST PERIOD.

IF LAMPS ARE ON FOR PERIODS NOT EXCEEDING 5 min, EACH SUCH PERIOD MUST BE FOLLOWED BY A 5 min REST PERIOD.

SUBSEQUENT TEST PROCEDURES REQUIRE THE TRIPPING OF CIRCUIT BREAKERS, TO ESTABLISH LEFT-HAND AND RIGHT-HAND WEIGHT SWITCH OPERATED RELAYS IN THE 'IN-FLIGHT' POSITION. CARE MUST BE TAKEN TO ENSURE THAT ALL SERVICES ADVERSELY AFFECTED BY THIS CONDITION ARE PREVIOUSLY ISOLATED (REF. 7-11-00).

1. General

This topic contains instructions for a Beam Alignment Test to ensure that the adjustable land/taxi lamps are correctly positioned with respect to the aircraft axis, and for lamp retraction adjustments to ensure full retraction of the lamp after beam alignment adjustments have been completed.

Operational, Functional and System Tests are not applicable to this topic, but an Operational Test of the land/taxi lights is detailed in 33-44-00, Adjustment/Test.

2. Beam Alignment Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-
R Clinometer	-

B. Prepare (Ref. Fig. 501)

(1) Make available electrical ground power as detailed

in 24-41-00.

(2) Ensure that the aircraft is standing on its wheels on a level surface with the nose landing gear bay doors closed. Ensure that a clear space extending at least 30 ft (9.15 m) is available in front of the land/taxi lamps.

(3) At the seat rails above the main landing gear, at frame 58, check the aircraft attitude, using the clinometer. The roll attitude must be 0 deg. The pitch attitude may be 0 deg, 1 deg or 2 deg nose-up.

(4) From the point on the ground immediately below the centre of each land/taxi lamp, mark a line (using chalked string or other suitable method) extending forward and passing through a point 30 ft (9.15 m) forward of the lamp and 21 in (533.4 mm) from the aircraft centre line.

(5) Ensure that the LANDING TAXI LIGHTS - ON - OFF control switches on the flight compartment roof panel are at OFF, and the RETRACT - EXTEND position control switches are at RETRACT.

(6) Trip circuit breakers LH UC WEIGHT SW 'A' SYS SUP, G292, on panel 1-213, map ref.M17, and RH UC WEIGHT 'B' SYS SUP, G294, on panel 3-213, map ref.B9, and fit safety clips. This will de-energize the weight switch relays, thus simulating flight conditions. Ensure that all services adversely affected by this condition are isolated (Ref. 7-11-00).

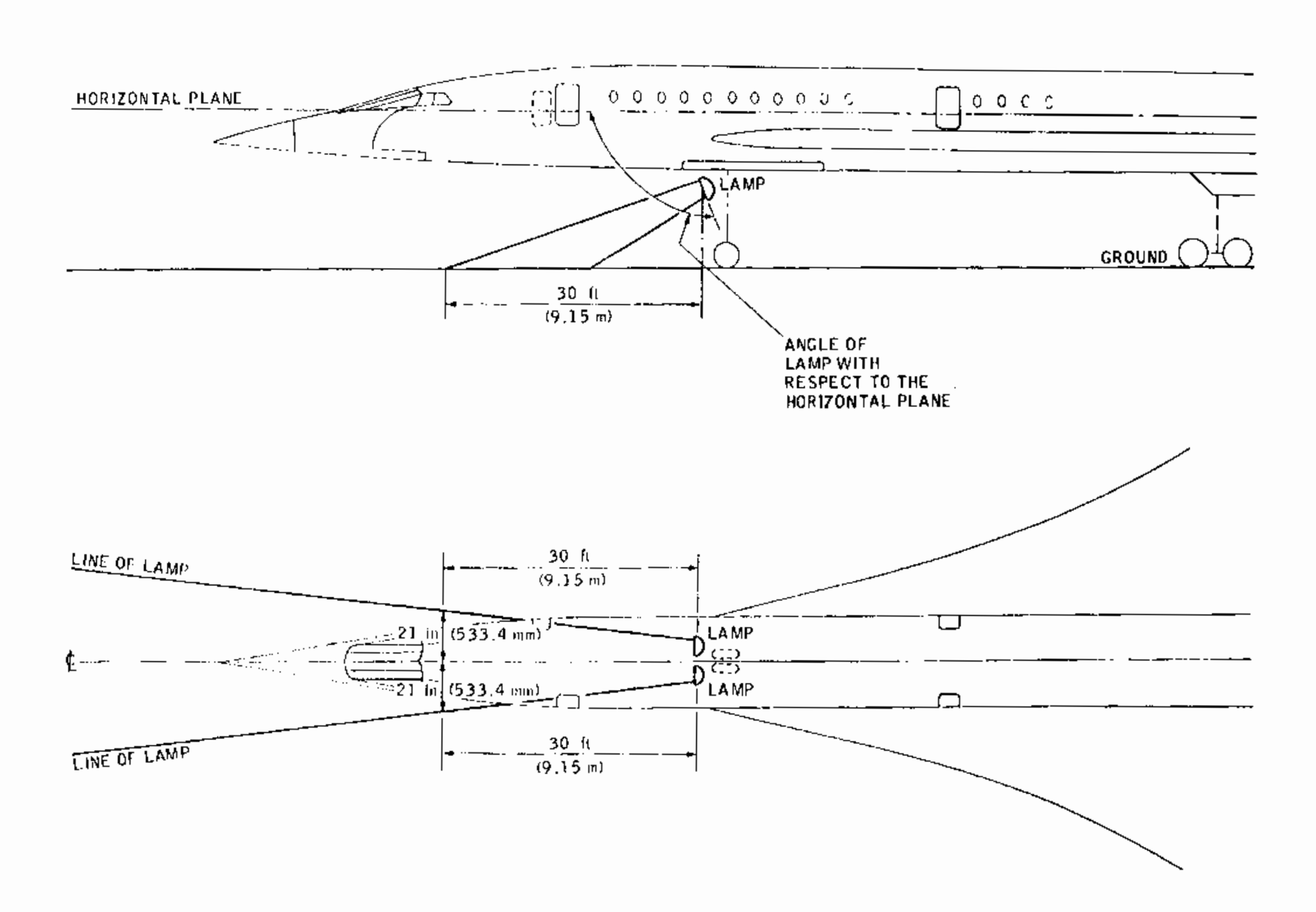
C. Test

(1) Set the appropriate left or right LANDING TAXI LIGHTS - RETRACT - EXTEND position control switch to "EXTEND" and check that the associated land/taxi lamp travels to its landing position.

(2) Set the associated LANDING TAXI LIGHTS light control switch to "ON" and check that the land/taxi lamp is lit.

(3) Check that the ellipse of light formed by the beam is bisected by the associated line drawn in operation B.(4). If not, adjust the horizontal setting as detailed in paragraph D.

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R

Land/Taxi Lamps
Figure 501

R R R R (4) Check the vertical alignment as detailed in paragraph E. Landing Position Vertical Adjustment. If necessary, adjust the vertical setting as detailed.

D. Horizontal Adjustment (Ref. Fig. 502)

(1) Set the associated light control switch to "OFF".

(2) Trip the associated circuit breakers listed below and fit safety clips.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH LDG/TAXI LT SUP	13-216	L46	B8
RH LDG/TAXI LT CONT	13-216	L42	B9
LH LDG/TAXI LT SUP	14-215	L45	E10
LH LDG/TAXI LT CONT	14-215	L41	E11

(3) Loosen the screws securing the lamp outer canopy to the nose landing gear bay door.

(4) Open the nose landing gear bay doors (Ref. Chap.32).

(5) Remove the plug access cover and the lamp cover from the lamp (Ref. Removal/Installation).

(6) Loosen the three horizontal adjusting nuts disposed at 120 deg intervals around the periphery of the lamp outer canopy. Ensure that the white lines painted on the outer canopy coincide with those painted on the canopy retaining collar.

NOTE: A new lamp will not have painted lines.

(7) Refit the lamp cover and plug access cover over the lamp and temporarily secure the covers.

(8) Close the nose landing gear bay doors (Ref. Chap.32).

(9) Remove the safety clips and reset the circuit breakers tripped in operation (2).

(10) Set the associated LANDING TAXI LIGHTS light control switch to "ON".

(11) Rotate the lamp until the correct horizontal setting is obtained (an adjustment of ±8 deg is provided).

(12) Tighten the screws securing the lamp outer canopy to the nose landing gear bay door.

(13) Set the associated LANDING TAXI LIGHTS position control switch to "RETRACT". Check that the lamp travels to its fully retracted position and that it fits flush in its housing.

(14) Set the position control switch to "EXTEND" and, when the lamp is extended to the landing position, check that the correct horizontal setting is still obtained.

(15) Set the associated light control switch to "OFF".

(16) Trip the associated circuit breakers listed in operation (2) and fit safety clips.

(17) Open the nose landing gear bay doors (Ref. Chap.32), and remove the plug access cover and lamp cover.

(18) Tighten the three horizontal adjusting nuts around the periphery of the lamp outer canopy.

NOTE: If a new lamp assembly is installed, ensure that white lines are painted on the outer canopy and on the canopy retaining collar, for future horizontal alignment.

(19) Refit the lamp cover and plug access cover to the lamp and secure them with the bolts.

(20) Close the nose landing gear bay doors.

(21) Remove the safety clips and reset the circuit breakers tripped in operation (16).

R E. Landing Position Vertical Adjustment (Ref. Fig.501 and 502)

(1) Ensure that the associated LANDING TAXI LIGHTS light control is at OFF and that the lamp is extended to the landing position.

(2) Ensure that the glass face of the lamp is clean and dry. Support the clinometer on the lamp face and check that the angle of the lamp with respect to the horizontal plane is as follows:-

Aircraft nose-up attitude 0 deg: clinometer reading 106 deg

Aircraft nose-up attitude 1 deg: clinometer reading 105 deg

Aircraft nose-up attitude 2 deg: clinometer reading 104 deg

(3) If necessary, adjust the landing position 'extend' limit microswitch adjusting screw, inside the lamp outer canopy, until the correct vertical setting is obtained.

NOTE: The landing position 'extend' limit microswitch adjusting screw is painted red. Counter-clockwise rotation of the screw will increase the extension angle. One full turn is equal to 2 deg, approximately.

(4) Set the associated LANDING TAXI LIGHTS position control switch to "RETRACT". Check that the lamp travels to its fully retracted position and that it fits flush in its housing.

(5) Set the position control switch to "EXTEND" and, when the lamp is extended to its landing position, using the clinometer, check that the correct vertical angle with respect to the horizontal plane is still obtained. Adjust as necessary and after each adjustment carry out a retract/extend cycle and recheck the lamp angle.

F. Beam Elliptical Axis Adjustment (Ref. Fig. 502)

(1) If the major elliptical axis of the beam is not parallel to the aircraft vertical axis, loosen the screws securing the glass face to the lamp. Adjust the screw on the worm drive on the side of the lamp inner assembly to rotate the sealed beam unit until the correct setting is obtained (an adjustment of ±8 deg is provided).

(2) Set the associated LANDING TAXI LIGHTS light control switch to "OFF".

(3) Tighten the glass face securing screws.

G. Lamp Retraction Adjustment (Ref. Fig. 502)

(1) If the lamp does not fit flush in its housing after retraction, fully extend the lamp, then trip the associated circuit breakers listed in paragraph D.(2) and fit safety clips.

(2) Open the nose landing gear bay doors and remove the plug access cover and lamp cover.

(3) Remove the cylindrical cap covering the micro-switches on the lamp drive assembly.

(4) Adjust the microswitch camshaft by turning the adjusting screw (1/2 turn of the screw gives approximately 0.05 in (1.27 mm) adjustment, measured between the rear edge of the lens and the outer canopy retaining collar).

(5) Refit the covers over the lamp and secure them temporarily.

(6) Remove the safety clips and reset the circuit breakers tripped in operation (1).

(7) Set the associated LANDING TAXI LIGHTS position control switch to "RETRACT". After retraction check that the lamp is flush in its housing.

(8) Repeat operations (1) and (2) and (4) to (7), until the correct setting is obtained.

(9) After final adjustment, trip the associated circuit breakers listed in operation D.(2), and fit safety clips.

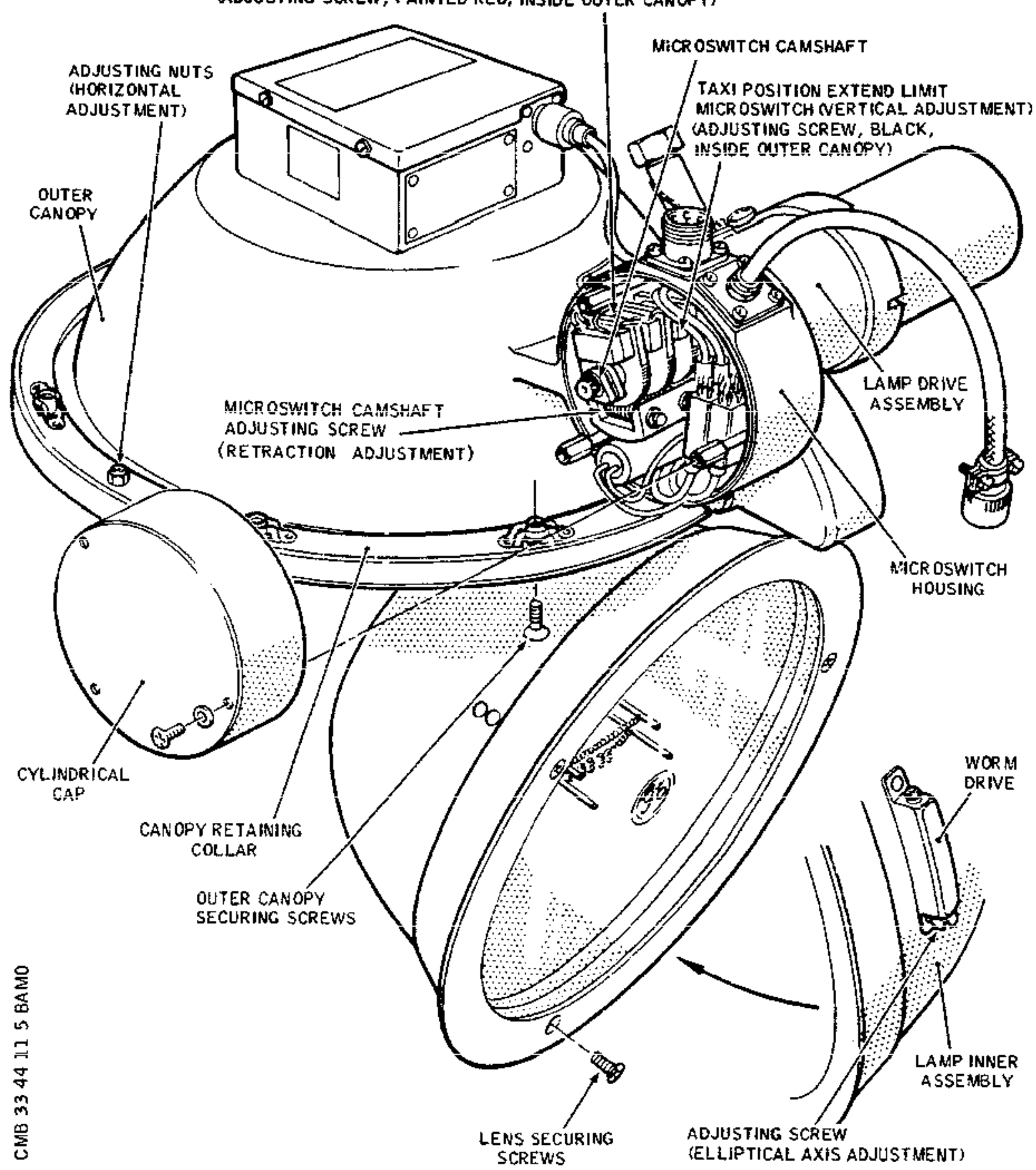
(10) Open the nose landing gear bay doors and remove the plug access cover and lamp cover.

(11) Refit the cylindrical cap to the lamp drive assembly.

(12) Refit the lamp cover and plug access cover to the lamp and secure them with the bolts.

(13) Close the nose landing gear bay doors.

(14) Remove the safety clips and reset the circuit breakers tripped in operation (9).



Land/Taxi Lamp Adjustment Controls
Figure 502

H. Taxi Position Vertical Adjustment (Ref. Fig.501 and 502)

(1) Reset circuit breakers LH UC WEIGHT SW 'A' SYS SUP, G292, on panel 1-213, map ref.M17, and RH UC WEIGHT SW 'B' SYS SUP, G294, on panel 3-213, map ref.B9, to establish aircraft taxiing conditions.

(2) Ensure that the weight switch relay controlled services, isolated with the requirements of operation B.(6), are reinstated as required.

(3) Set the associated LANDING TAXI LIGHTS light control and position control switches to "ON" and "EXTEND" respectively. Check that the lamp extends to the 'taxi' position and that the lamp is lit.

(4) Set the associated LANDING TAXI LIGHTS light control switch to 'off'.

(5) Ensure that the glass cover of the lamp is clean and dry. Support the clinometer on the glass face and check that the angle of the lamp with respect to the horizontal plane is as follows:-

Aircraft nose-up attitude 0 deg: clinometer reading 95 deg

Aircraft nose-up attitude 1 deg: clinometer reading 94 deg

Aircraft nose-up attitude 2 deg: clinometer reading 93 deg

(6) If adjustment is required, correct the setting of the taxi position 'extend' limit microswitch by adjusting the black screw inside the lamp outer canopy until the correct vertical setting is obtained.

NOTE: The taxi position 'extend' limit microswitch adjusting screw is black. Counterclockwise rotation of the screw will increase the extension angle. One full turn is equal to 2 deg, approximately.

Only vertical settings are required at this stage.

(7) Complete a full retract, extend and retract cycle

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to ensure that the vertical setting is still obtained.

R

R I. Conclusion

R (1) Carry out an Operational Test of the land/taxi lights as detailed in 33-44-00, Adjustment/Test.

R

TURN-OFF LIGHT - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General (Ref. Fig. 401)

This topic contains instructions for the renewal of a turn-off lamp sealed beam unit, and for the removal and installation of a turn-off lamp assembly.

Two turn-off lamps are fitted, one on each side of the forward fuselage, below the forward-facing windshield.

2. Sealed Beam Unit - Renewal (Ref. Fig. 401)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the left or right TAXI TURN LIGHTS switch, as appropriate, is at "OFF".

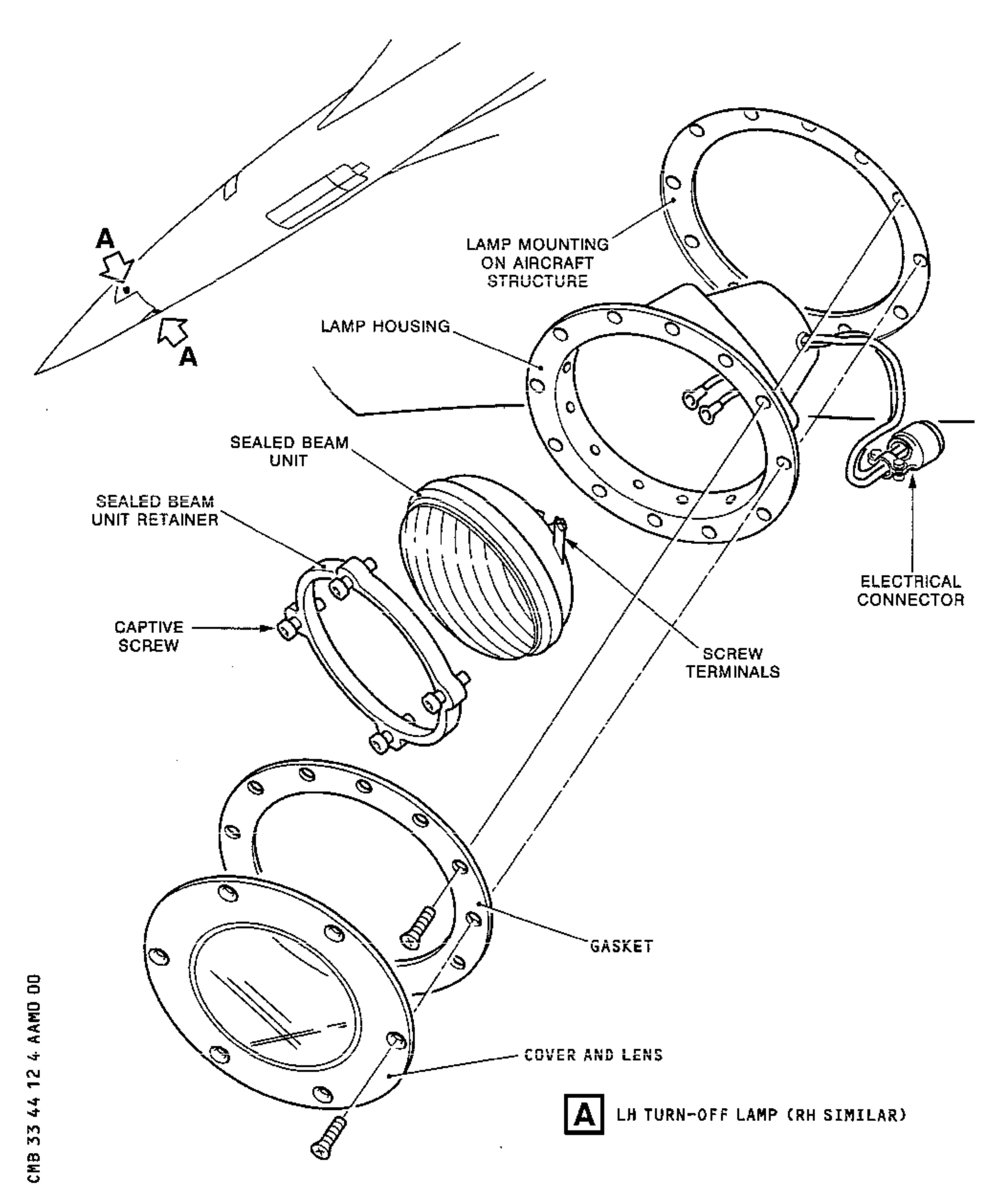
(2) Trip the associated RH TAXI/TURN OFF LT SUP circuit breaker L48, on panel 15-216, map ref.B12, or the LH TAXI/TURN OFF LT SUP circuit breaker L47, on panel 15-215, map ref.A14, and fit a safety clip.

C. Renew

(1) Remove the screws securing the lamp cover to the lamp housing and withdraw the cover, complete with lens, from the lamp.

(2) Release the captive screws securing the sealed beam unit retainer in the lamp housing, remove the retainer and withdraw the sealed beam unit from its mounting sufficiently to gain access to the screw terminals.

(3) Label the electrical cables to assist identification for reconnection. Disconnect the electrical cables from the terminals and remove the sealed beam unit.



Turn-off Lamp Assembly - Installation
Figure 401

(4) Support the replacement sealed beam unit and connect the electrical cables to the screw terminals, ensuring that the connections are made in accordance with the cable identifications.

(5) Fit the sealed beam unit to its mounting in the lamp housing, support the unit, refit the retainer and secure it with the captive screws.

(6) Fit the lamp cover, complete with lens, to the lamp housing, support the cover and secure it with the screws.

D. Conclusion

(1) Remove the safety clip and reset the circuit breaker tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

CAUTION: DO NOT LEAVE THE TURN-OFF LAMP LIT FOR MORE THAN 5 min IN ANY 10 min PERIOD.

(3) Set the appropriate left or right TAXI TURN LIGHTS switch to "ON" and check that the associated turn-off lamp is lit. Return the switch to "OFF".

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

3. Turn-off Lamp - Removal/Installation (Ref. Fig. 401)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the left or right TAXI TURN LIGHTS switch, as appropriate, is at "OFF".

(2) Trip the associated RH TAXI/TURN OFF LT SUP circuit breaker L48, on panel 15-216, map ref.B12, or the LH TAXI/TURN OFF LT SUP circuit breaker L47, on panel 15-215, map ref.A14, and fit a safety clip.

C. Remove

(1) Remove the screws securing the lamp cover to the lamp housing and withdraw the cover, complete with lens, from the lamp.

(2) Remove the screws securing the lamp housing to the aircraft structure and withdraw the lamp housing, together with the gasket, from the aircraft fuselage to the extent of the electrical cable.

(3) Disconnect the electrical connector and remove the turn-off lamp.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the turn-off lamp and connect the electrical connector, ensuring that the mating surfaces are clean and undamaged.

(3) Position the lamp on its mounting on the aircraft structure. Support the lamp, fit the gasket around the periphery of the lamp and secure the assembly to the mounting with the screws.

(4) Fit the lamp cover, complete with lens, to the lamp housing, support the cover and secure it with the screws.

E. Conclusion

(1) Remove the safety clip and reset the circuit breaker tripped before removal.

(2) Make available electrical ground power as detailed in 24-41-00.

<u>CAUTION</u>: DO NOT LEAVE THE TURN-OFF LAMP LIT FOR MORE THAN 5 min IN ANY 10 min PERIOD.

(3) Set the appropriate left or right TAXI TURN LIGHTS switch to "ON" and check that the associated turn-off lamp is lit. Return the switch to "OFF".

(4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

END OF THIS SECTION

NEXT

EMERGENCY LIGHTING - DESCRIPTION AND OPERATION

1. General (Ref. Fig.001 and 002)

   A. The emergency lighting system consists of two separate and independent lighting circuits (System A and System B).

   System A operates if the aircraft d.c. essential supplies fail. The system comprises a lighting circuit consisting of rechargeable 6 V batteries which light filaments in the flight compartment roof lamps (Ref. 33-12-00), the forward and rear passenger cabin emergency lanterns, the threshold lamps in each door and in the exit signs and exit direction signs. These filaments are connected in groups (Ref. Table 1) and each group is supplied by its own electronically switched battery pack.

   System B operates if the aircraft a.c. supply feeding the main lighting system fails or whenever the NO SMKG switch is at ON (Ref. 33-25-00). System B comprises a 'standby' lighting circuit which consists of the 28 V filaments in the exit signs and exit direction signs, the cabin 'dim' lighting (Ref. 33-23-00), the vestibule 'dim' lighting (Ref. 33-23-00) and toilet standby lighting (Ref. 33-22-00).

   B. When testing the Emergency Lighting System of aircraft with Floor Proximity Lighting Systems installed (Mod 33D022), it is important to note that the Pilots Emergency Light Switch will operate both the Overhead Emergency Lighting System and the Floor Proximity Lighting System. Extreme care must be exercised, whenever testing of the Emergency Lighting System is carried out to avoid depletion of the Floor Proximity Lighting System NON-RECHARGEABLE battery packs.

   CAUTION: "ON TEST" MUST BE USED WHENEVER IT IS NECESSARY TO TEST THE OVERHEAD EMERGENCY LIGHTING, "OFF TEST" MUST BE USED WHENEVER IT IS NECESSARY TO TEST THE FLOOR PROXIMITY LIGHTING.

   C. The Attendant's Emergency Light Switch will cause the Floor Proximity Lights to be energised and deplete the batteries and must therefore not be used to turn the Emergency Lights ON unless absolutely necessary.

      (1) Use of the Emergency Light Test position of the Attendants panel Emergency Light Switch installed on Concorde will cause the Floor Proximity Lights to come ON. This switch is not to be used for testing the existing Overhead Emergency Lights or Floor Proximity Lights.

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RB D. Whenever it is necessary to test the existing Overhead
RB Emergency Lighting, use must be made of the "ON TEST" Mode
RB of the Floor Proximity Light System. This test is described
RB in 33-51-00 page 201.

2. Flight Compartment Roof Lamps

Three 6 V filaments are fitted in each roof lamp in the flight compartment (Ref. 33-12-00).

3. Emergency Lanterns (Ref. Fig.003)

Each emergency lantern comprises a reflector assembly, four 6 V filaments and a clear lens which fits flush with the aircraft furnishing line. The reflector is hinged to its mounting bracket and held in the closed position by a securing bolt. The clear lens is secured to the reflector by spring clips and is removable for the replacement of filaments.

GROUP NO.	BATTERY PACK LOCATION	SIGNS AND LAMPS SUPPLIED
1	Fwd. vestibule roof	Fwd. service door EXIT sign Fwd. service door threshold lamp

Continued on Page 2

GROUP NO.	BATTERY PACK LOCATION	SIGNS AND LAMPS SUPPLIED
2	Fwd. vestibule roof	Fwd. passenger door EXIT sign Fwd. passenger door threshold lamp Fwd. vestibule exit direction sign
3	Between luggage bins on left side of fwd. cabin, level with centre roof lantern	Three roof lanterns spaced at intervals in the fwd. cabin roof
4	Centre vestibule roof	Centre service door EXIT sign Centre service door threshold lamp Centre vestibule exit direction sign (forward)
5	Centre vestibule roof	Centre passenger door EXIT sign Centre passenger door threshold lamp Centre vestibule exit direction sign (rear)
6	Between luggage bins on left side of rear cabin, level with second roof lantern	Three roof lanterns spaced at intervals in the rear cabin roof
7	Rear vestibule roof	Rear right door EXIT sign

GROUP NO.	BATTERY PACK LOCATION	SIGNS AND LAMPS SUPPLIED
		Rear right door threshold lamp
		Rear vestibule exit direction sign
8	Above rear steward's control panel	Rear left door EXIT sign
		Rear left door threshold lamp
		Roof lantern in rear cabin
-	Flight compartment roof	6 V filaments in flight compartment roof lamps

System A Emergency Light Grouping
Table 1

4. Above-door Exit Signs (Ref. Fig.003 and 004)

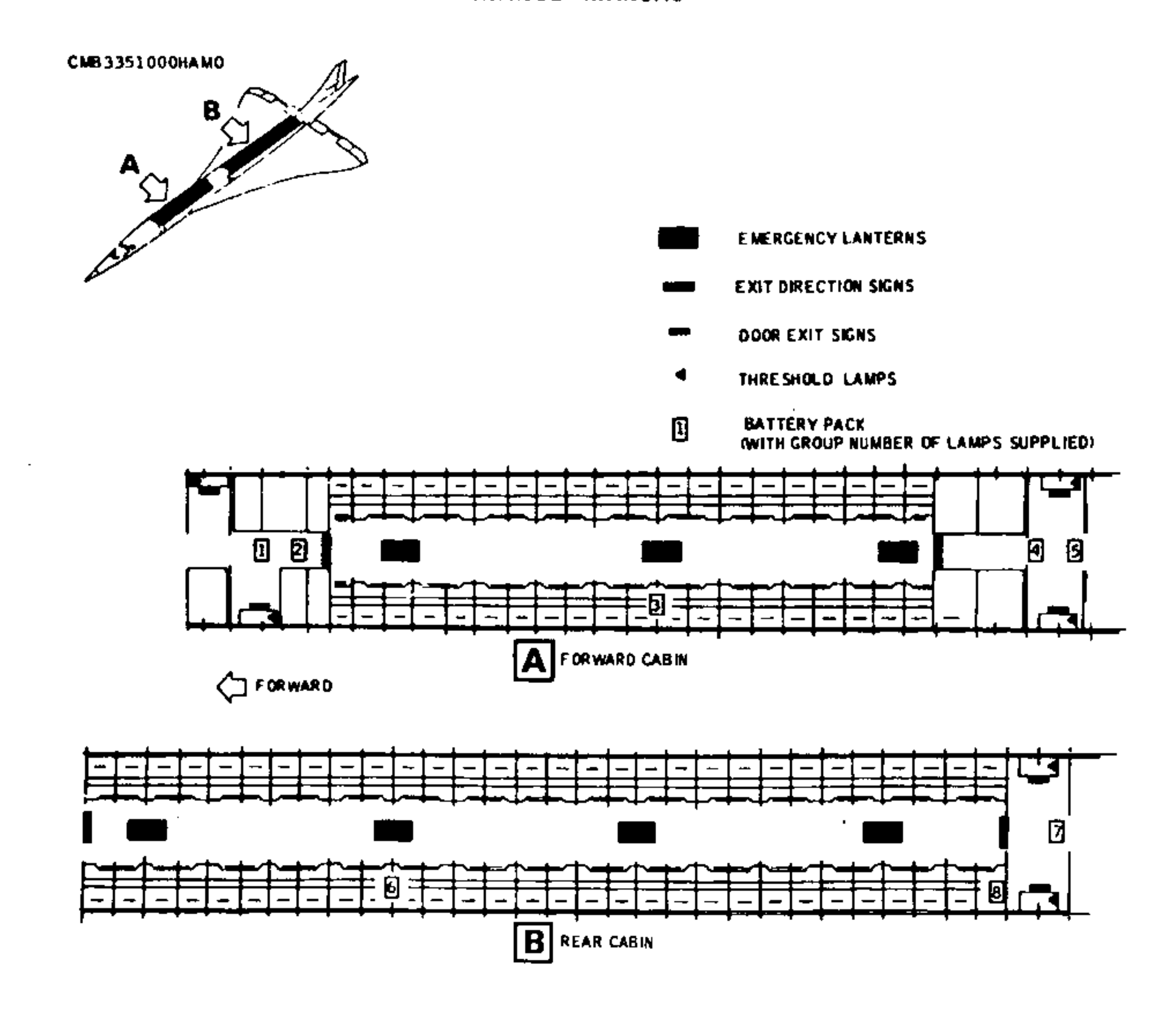
The EXIT sign above each passenger and service door consists of a case in which are fitted five 6 V filaments and four 28 V filaments covered by a translucent sign engraved EXIT, and two 6 V and two 28 V filaments fitted along the bottom exterior surface of the case and covered by a clear lens. Light through the clear lens illuminates the door exit area.

The translucent sign is secured to the case by spring clips and is easily removable for replacement of filaments.

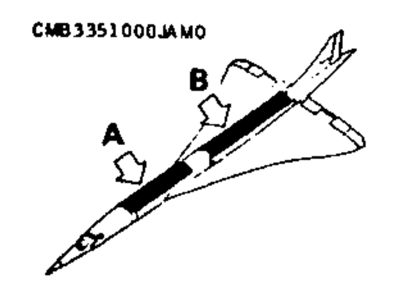
The clear lens on the bottom of the case is removed by releasing two captive screws securing the lens to the case.

5. Exit Direction Signs (Ref. Fig.003 and 004)

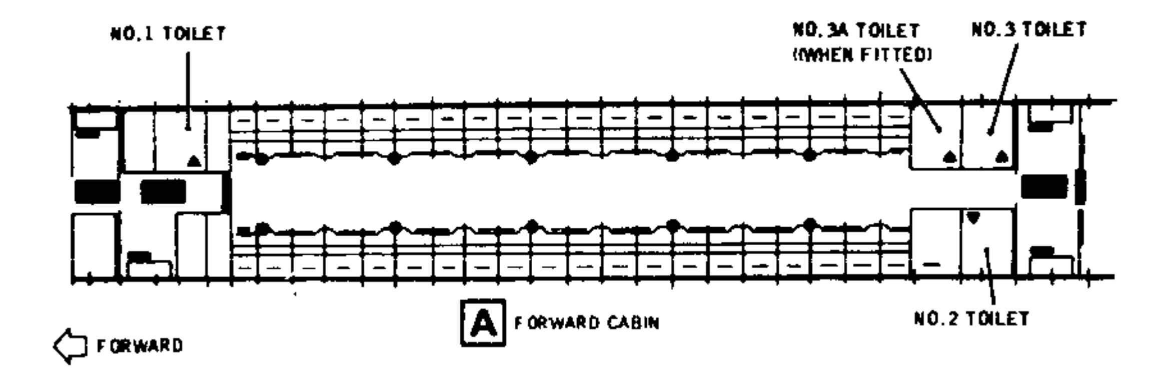
The exit direction signs above the centre aisles each

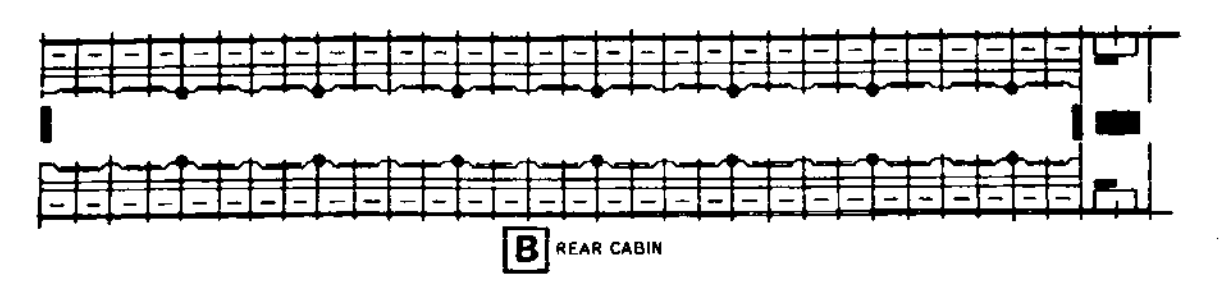


Emergency Lighting - System A
Figure 001



- ● CABIN 'DIM' LIGHTING
- ▬ VESTIBULE 'DIM' LIGHTING
- ▲ TOILET FILAMENT LIGHTING
- ▬ DOOR EXIT SIGNS
- ▬ EXIT DIRECTION SIGNS





Emergency Lighting - System B
Figure 002

comprise five 6 V filaments and six 28 V filaments fitted behind a translucent sign panel engraved EXIT.

The translucent sign panel is fitted to the lamp case by means of a groove along the lower edge of the panel and secured at the upper edge by a retaining strip. Finger recesses in the panel facilitate removal of the panel from the lamp case.

6. Threshold Lamps (Ref. Fig. 003)

The threshold lamp in each door comprises four 6 V filaments enclosed by a front and rear cover secured together by two captive screws. The front cover incorporates a clear lens which directs the light downward towards the door threshold. The assembly is secured in the door structure by a retaining ring which is screwed to the door panel. On the rear doors the threshold lamp is mounted on the escape pack.

7. Battery Pack (Ref. Fig. 003)

Each battery pack comprises a case containing a rechargeable 6 V cadmium nickel battery, a solid state battery control circuit, a charging circuit and a terminal block. A cover is secured to the case by six captive screws and is removable to gain access to the components.

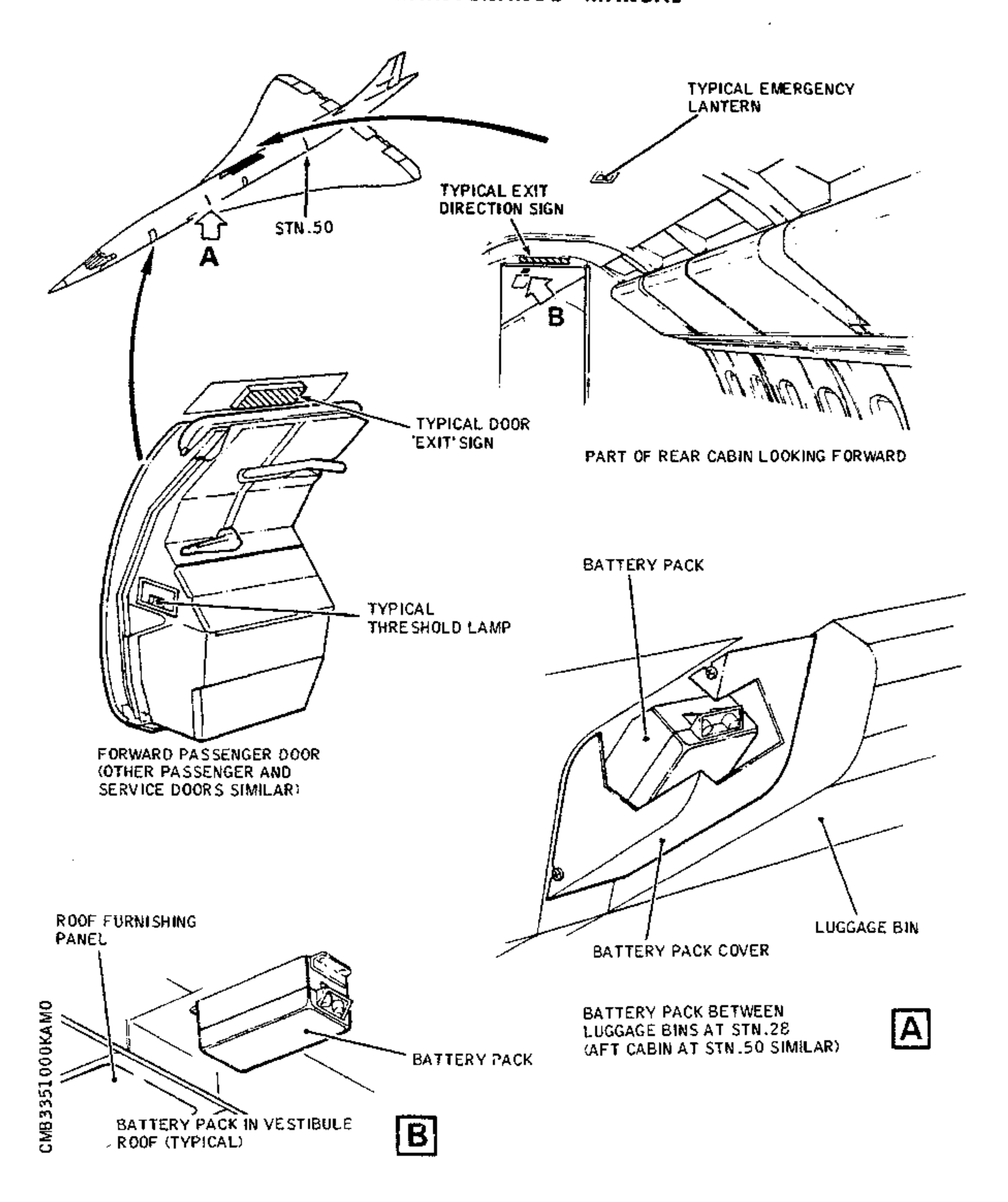
The battery is secured in the case by a retainer fitted with felt anti-vibration pads and held in position by two captive screws.

8. Operation (Ref. Fig. 005)

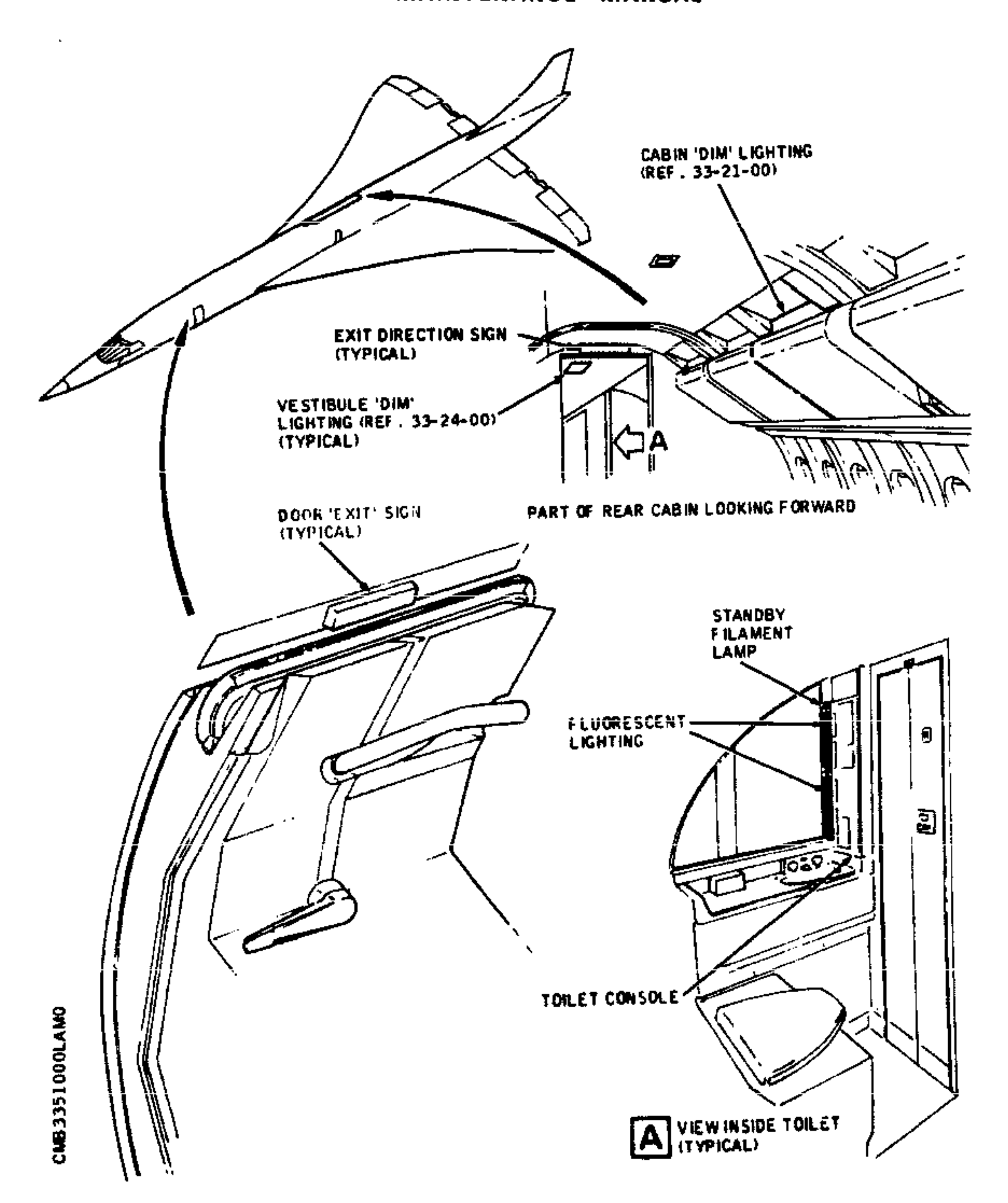
A. Control and Indication

System A emergency lighting is controlled by a pilots' OFF - ARM - ON emergency (EMERG) lighting control switch on the lights section of the flight compartment roof panel, and by a steward's TEST - NORMAL - ON emergency (EMERG) lighting control switch on the forward steward's control panel.

The pilots' EMERG switch includes a filament in the toggle which lights when the switch is in the OFF position, and at the other two positions when the associated LIGHT TEST switch is pressed (Ref. 33-14-00). The switch is mechanically locked (pull-to-unlock) in each position and is effective as follows:-



System A - Location of Equipment
Figure 003



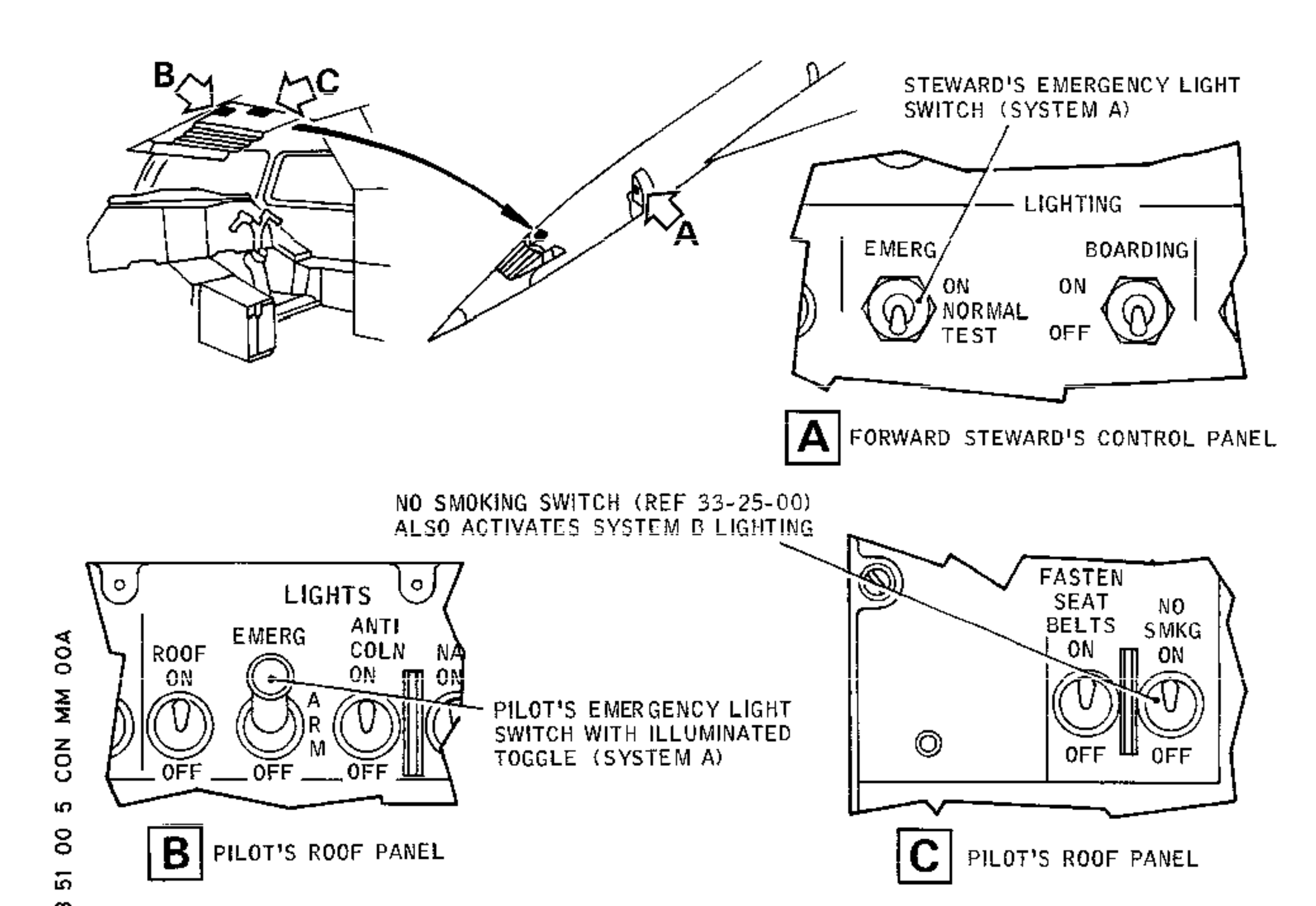
System B - Location of Equipment
Figure 004

SWITCH POSITION	28V DC SUPPLY	CONNECTED TO BATTERY PACK TERMINALS
	'A' ESSENTIAL	OFF (and toggle switch filament)
"OFF"	'A' MAIN	ARM
"ARM"	'A' MAIN	ARM
"ON"	'A' ESSENTIAL	ON

The steward's panel EMERG switch is mechanically locked (pull-to-unlock for NORMAL-to-ON operation) and spring-loaded to return the toggle to NORMAL from the TEST position, and is effective as follows:

CAUTION: DO NOT OPERATE CABIN SWITCH TO 'ON' OR 'TEST' (WHEN PILOTS SWITCH TO 'ARM') DURING AIRCRAFT MAINTENANCE UNLESS THE FLOOR PROXIMITY LIGHTING IS DE-ACTIVATED REF 33-52-00 PAGE 201.

Pilots EMERG Switch Position	Cabin EMERG Switch Position	Battery pack inputs/ System Operation
	TEST	28 V d.c. ESS removed from OFF terminals, 28 V d.c. MAIN removed from ARM terminals; lights remain extinguished
OFF	NORM	As per pilots switch
	ON	28 V d.c. ESS connected to ON terminals, 28 V d.c. ESS removed from OFF terminals, 28 V d.c. MAIN removed from ARM terminals; lights illuminate
	TEST	28 V d.c. MAIN removed from ARM terminal, lights illuminate
ARM	NORM	As per pilots switch
	ON	28 V d.c. MAIN removed from ARM terminal, 28 V d.c. ESS. connected to ON TERMINAL; lights illuminate
	TEST	As per pilots switch
ON	NORM	As per pilots switch
	ON	Cabin switch provides a second connection from 28 V d.c. ESS to ON terminal



Systems A and B - Controls and Indicators
Figure 005

System 'B'stand-by lighting, for illuminating the over-door exit signs and exit direction signs, is controlled by one contact of the NO SMKG ON/OFF switch (Ref.33-25-00) on the flight compartment roof panel, or by the emergency oxygen
RB system services relay (Ref.35-21-00). If the NO SMKG switch is at ON or the relay is energized, the 'A' essential 28 V d.c. busbar is connected to the standby filaments in each exit sign.

B. Functional Description (Ref. Fig.006)

Under normal operating conditions the pilots' EMERG lighting switch on the flight compartment roof panel is set at ARM and the steward's EMERG lighting switch on the forward steward's panel at NORMAL. With 'A' main 28 V d.c. supplies available, power is applied to each battery electronic switching circuit which is activated to trickle-charge the battery and to arm the battery for automatic operation if the 28 V d.c. supply fails. All 6 V emergency lights are extinguished.

A subsequent loss of the 28 V d.c. supply will initiate electronic switching in the battery pack to complete the circuit from each battery to the associated filaments and simultaneously terminate the trickle-charge supply. All 6 V emergency filaments will be lit.

RB Setting the pilots' EMERG switch to ON connects 'A' essential
RB 28 V d.c. to the ON terminals of all the emergency light
RB battery packs. The system is now selected hard on, and will
RB remain ON until the switch is deselected from ON, or the
RB system batteries are depleted.

RB When the pilots EMERG switch is at OFF, 'A; essential 28 V d.c.
RB is connected to the OFF terminal and 'A' main 28 V d.c. is
RB connected to the ARM/CHARGE terminal of each battery unit. The
RB OFF supply ensures the system is off when selected and allows
RB the subsequent removal of A.C. power without activating the
RB emergency light system.

When the aircraft is on the ground, to avoid automatically switching on the emergency lighting system with consequent draining of the batteries, it is essential that the EMERG switch on the flight compartment roof panel is set at OFF before the aircraft electrical supplies are switched off.

The steward's EMERG switch operates in the same way as the pilots' EMERG switch when at ON, and lights the 6 V filaments. When the pilots' EMERG switch is at ARM and the steward's EMERG switch is pressed to TEST, the 28 V d.c. supply to the battery pack is disconnected, thus simulating loss of power, and all 6 V emergency filaments are switched on by the battery pack electronic switching.

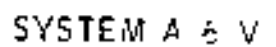
When the NO SMKG switch (Ref. 33-25-00) on the flight compartment roof panel is set to ON or the emergency oxygen services relay (Ref.35-21-00) is energized, a 28 V d.c. supply is connected to light the 'standby' filaments in the exit signs over the doors and the exit direction signs over the centre aisles.

Failure of the aircraft a.c. power supplies to the main cabin lighting will automatically switch on the associated system B 'standby' filament lighting in the passenger cabins (Ref.33-21-00), vestibules (Ref. 33-23-00) and toilets (Ref. 33-22-00).

9. Electrical Power Supplies

System A is powered from rechargeable batteries within power packs located close to the groups of emergency light units they control.
RB The batteries are trickle-charged from 'A; main 28 V d.c. busbar,
RB through a circuit breaker on circuit breaker panel 15-215.

RB System B is supplied from the 'A' essential 28 V d.c. busbar
RB through a circuit breaker on circuit breaker panel 1-213.



BATTERY PACKS

GROUP 1 (ON / ARM / OFF)
FORWARD SERVICE DOOR EXIT SIGN
FORWARD SERVICE DOOR THRESHOLD LAMP

GROUP 2 (ON / ARM / OFF)
FORWARD PASSENGER DOOR EXIT DOOR
FORWARD PASSENGER DOOR THRESHOLD LAMP
FORWARD VEST EXIT DIRECTION SIGN

GROUP 3 (ON / ARM / OFF)
EMERGENCY ROOF LANTERNS IN FORWARD CABIN

GROUP 4 (ON / ARM / OFF)
CENTRE SERVICE DOOR EXIT SIGN
CENTRE SERVICE DOOR THRESHOLD LAMP
CENTRE VEST EXIT DIRECTION SIGN

GROUP 5 (ON / ARM / OFF)
CENTRE PASSENGER DOOR EXIT SIGN
CENTRE PASSENGER DOOR THRESHOLD LAMP
CENTRE VEST EXIT DIRECTION SIGN

GROUP 6 (ON / ARM / OFF)
EMERGENCY ROOF LANTERNS IN REAR CABIN

GROUP 7 (ON / ARM / OFF)
REAR RIGHT DOOR EXIT SIGN
REAR RIGHT DOOR THRESHOLD LAMP
REAR VEST EXIT DIRECTION SIGN

GROUP 8 (ON / ARM / OFF)
REAR LEFT DOOR EXIT SIGN
REAR LEFT DOOR THRESHOLD LAMP
EMERGENCY ROOF LANTERN IN REAR CABIN

FLIGHT COMP. (ON / ARM / OFF)
6 V FILAMENTS IN FLIGHT COMPARTMENT ROOF LAMPS

'A' MAIN 28 V DC

'A' ESSENTIAL 28 V DC

ON
ARM
OFF

ON
NORMAL
TEST

STEWARDS EMERGENCY LIGHT SWITCH

TO FLIGHT COMPARTMENT LIGHTS TEST (REF 33-14-00)

ILLUMINATED TOGGLE

PILOTS EMERGENCY LIGHT SWITCH

NO SMOKING SWITCH (REF 33-25-00)

SYSTEM B 28V

TO ALL ESCAPE DOOR EXIT SIGNS

TO ALL VESTIBULE EXIT DIRECTION SIGNS

EMERGENCY OXYGEN SYSTEM SERVICES RELAY (REF 35-21-00)

33 51 00 6 CON MM 00A

Emergency Lighting - Simplified Schematic
Figure 006

R

EMERGENCY LIGHTING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

CAUTION: ALL CHECKS WITH 6 V EMERGENCY LIGHTS ON MUST BE COMPLETED AS QUICKLY AS POSSIBLE TO CONSERVE THE LIFE OF THE BATTERIES.

RB CAUTION: WHEN TROUBLESHOOTING SYSTEM A EMERGENCY LIGHTING, THE FLOOR
RB PROXIMITY LIGHTING SYSTEM MUST FIRST BE DE-ACTIVATED
RB I.A.W. 33-52-00 PAGE 201.

1. General

Faults are dealt with on a probability basis and identified as a result of testing.

The defect can be isolated with the aid of trouble shooting procedures (Ref. para.3.), and traced through if OK and if NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure that the operation is O.K.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification. Component location also indicates the possible necessity of repositioning certain items of ground service equipment. Each chart also specifies the ground equipment required for that particular task.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

This topic contains trouble shooting procedures and charts for System A emergency Lighting, and for the 28 V lighting in the exit signs associated with System B. Trouble shooting procedures and charts for the remainder of System B emergency lighting are contained in cabin lighting, boarding and vestibule lighting, and toilet lighting trouble shooting (Ref. 33-21-00, 33-23-00 and 33-22-00, respectively).

Systems A emergency battery packs and the associated group of signs and lamps that each battery pack controls, are listed in Description and Operation, Table 1.

2. Preparation

   A. Ensure that the associated circuit breakers are set (Ref. Table 101).

   B. Make available electrical ground power as detailed in 24-41-00.

3. Trouble Shooting - System A

RB CAUTION: WHEN TROUBLESHOOTING SYSTEM A EMERGENCY LIGHTING, THE
RB FLOOR PROXIMITY LIGHTING SYSTEM MUST FIRST BE
RB DE-ACTIVATED I.A.W. 33-52-00 PAGE 201.

A. Prepare to trouble shoot (Ref. para.2.). Ensure that pilots' and steward's EMERG light switches are at OFF and NORMAL respectively. Check that filament in pilots' EMERG switch toggle is lit.
IF -

OK → B.

NOT OK →
1. Filament in toggle not lit - renew filament. If toggle still not lit - Chart 101.

RB B. Set pilots' EMERG switch to "ARM" and check that toggle light is extinguished. Trip CB (2) and check that all 6 V emergency lamps, lanterns and exit signs are lit.
IF -

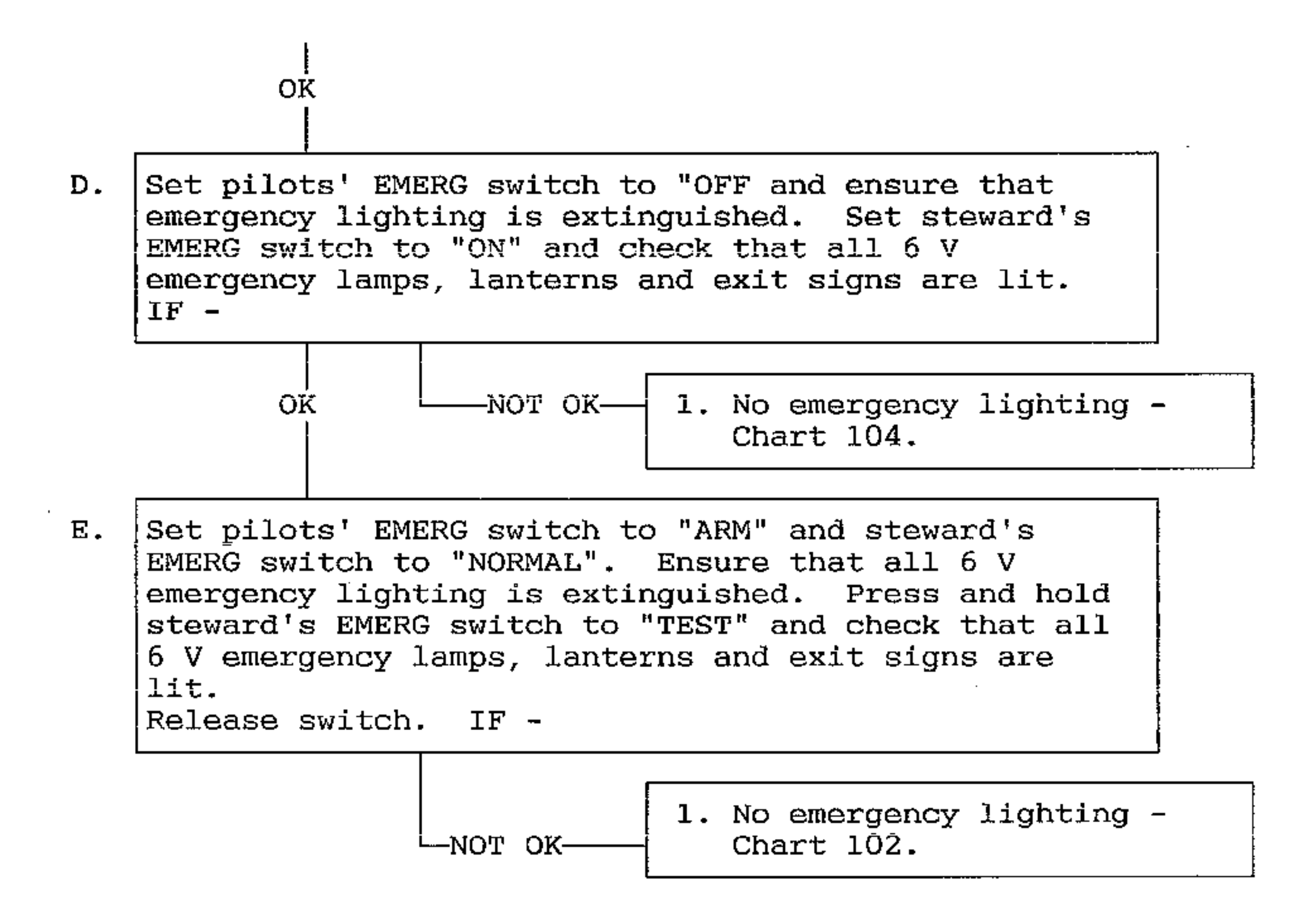
OK → C.

NOT OK →
1. Individual filaments not lit - renew filaments.
2. One group of filaments not lit - remove associated battery from emergency battery pack and replace with a fully charged battery. If still not OK, renew associated battery pack.
3. No 6 V emergency lighting. Check all 6 V batteries. If not OK - renew or recharge batteries. If OK - Chart 102.

RB C. Reset CB (2) and check that all 6 V emergency lighting is extinguished. Set pilots' EMERG switch to "ON" and check that all 6 V emergency lamps, lanterns and exit signs are lit.
IF -

OK

NOT OK →
1. No emergency lighting - Chart 103



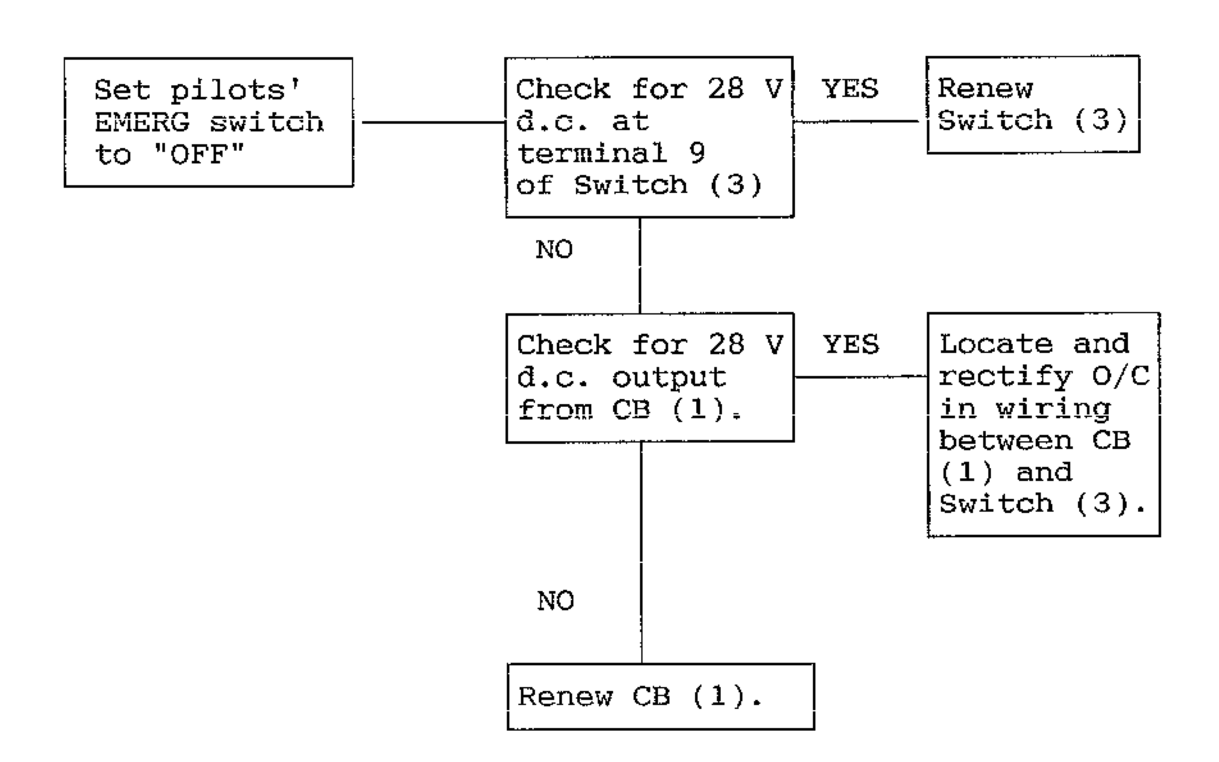
4. Trouble Shooting - System B

A. Prepare to trouble shoot (Ref. para.2.). Set NO SMKG switch on pilots' roof panel to "ON". Check that all 28 V filaments in all exit signs are lit.
IF -

NOT OK

1. Individual filaments not lit - renew filaments.
2. No 28 V lighting in exit signs - Chart 105.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
GROUND POWER SUPPLY	-
MULTIMETER	-



RB
RB

RB

Chart 101

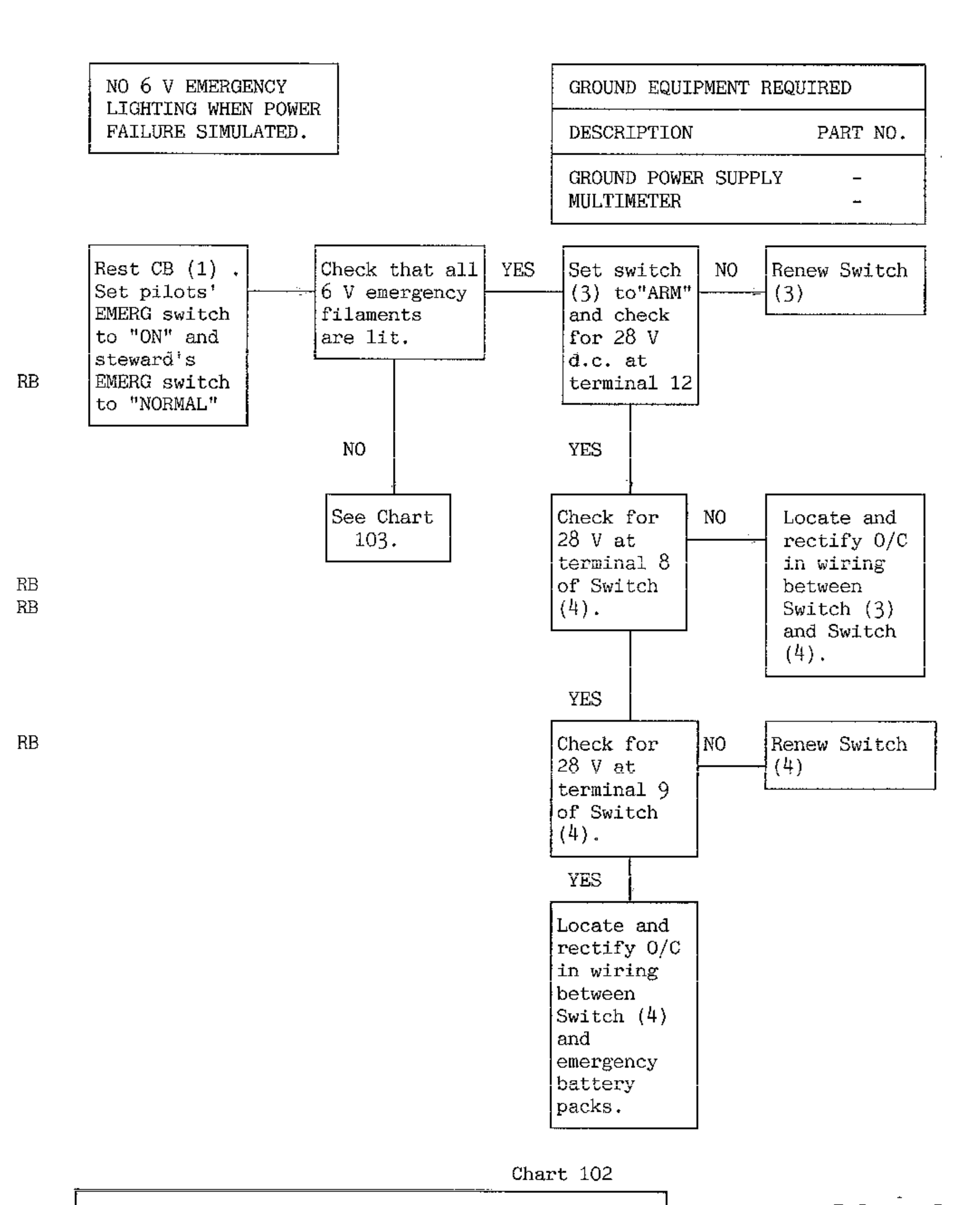
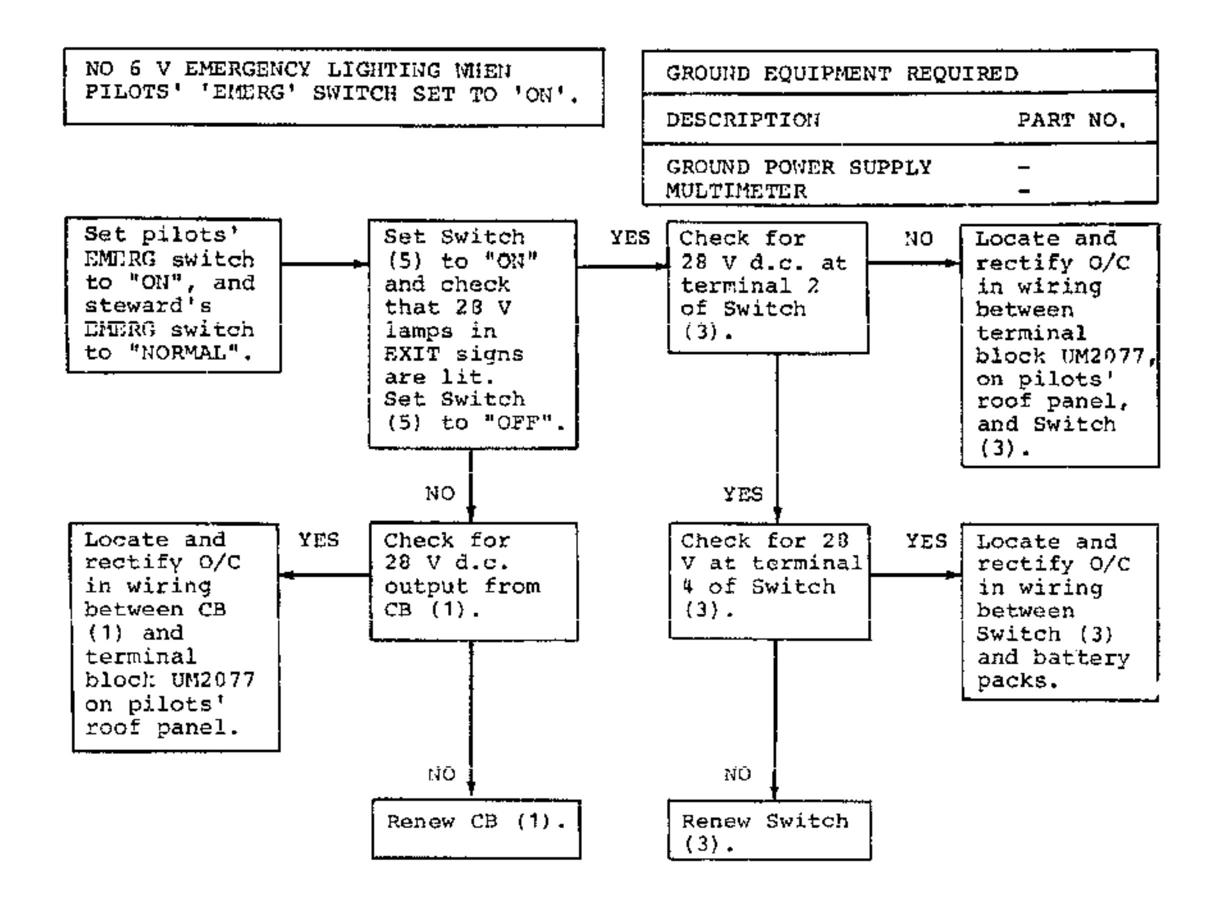
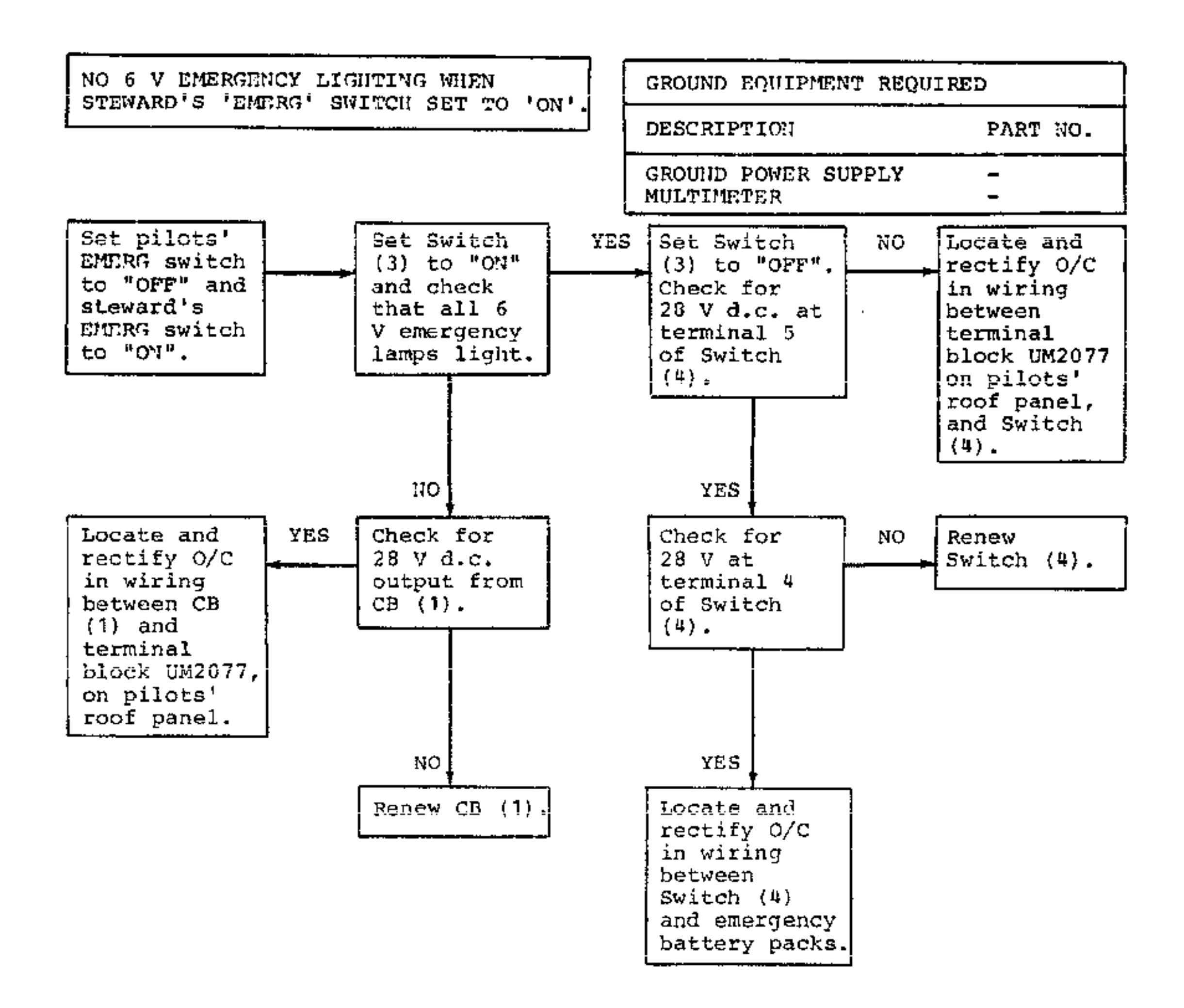

NO 6 V EMERGENCY LIGHTING WHEN POWER FAILURE SIMULATED.
GROUND EQUIPMENT REQUIRED
DESCRIPTION
PART NO.
GROUND POWER SUPPLY -
MULTIMETER -
Rest CB (1) . Set pilots' EMERG switch to "ON" and steward's EMERG switch to "NORMAL"
RB
Check that all 6 V emergency filaments are lit.
YES
NO
See Chart 103.
Set switch (3) to"ARM" and check for 28 V d.c. at terminal 12
NO
Renew Switch (3)
YES
Check for 28 V at terminal 8 of Switch (4).
RB
RB
NO
Locate and rectify O/C in wiring between Switch (3) and Switch (4).
YES
Check for 28 V at terminal 9 of Switch (4).
RB
NO
Renew Switch (4)
YES
Locate and rectify O/C in wiring between Switch (4) and emergency battery packs.

Chart 102



NO 6 V EMERGENCY LIGHTING WHEN PILOTS' 'EMERG' SWITCH SET TO 'ON'.
GROUND EQUIPMENT REQUIRED
DESCRIPTION
PART NO.
GROUND POWER SUPPLY -
MULTIMETER -
Set pilots' EMERG switch to "ON", and steward's EMERG switch to "NORMAL".
Set Switch (5) to "ON" and check that 28 V lamps in EXIT signs are lit. Set Switch (5) to "OFF".
YES
Check for 28 V d.c. at terminal 2 of Switch (3).
NO
Locate and rectify O/C in wiring between terminal block UM2077, on pilots' roof panel, and Switch (3).
NO
YES
Locate and rectify O/C in wiring between CB (1) and terminal block UM2077 on pilots' roof panel.
YES
Check for 28 V d.c. output from CB (1).
Check for 28 V at terminal 4 of Switch (3).
YES
Locate and rectify O/C in wiring between Switch (3) and battery packs.
NO
NO
Renew CB (1).
Renew Switch (3).
CMB3351001KAM0

Chart 103



CHB3351001LAM0

Chart 104

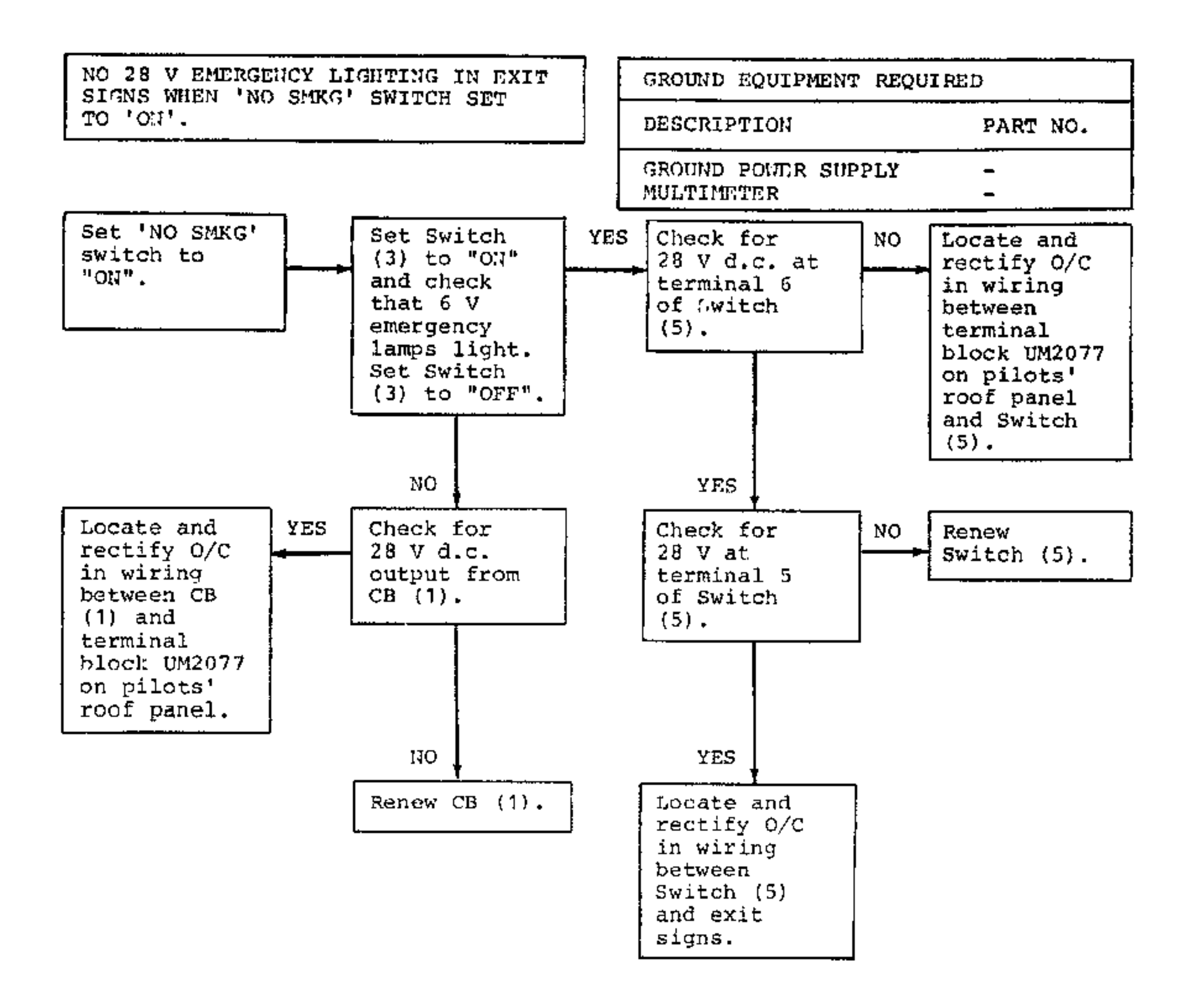

NO 28 V EMERGENCY LIGHTING IN EXIT SIGNS WHEN 'NO SMKG' SWITCH SET TO 'ON'.
GROUND EQUIPMENT REQUIRED
DESCRIPTION
PART NO.
GROUND POWER SUPPLY -
MULTIMETER -
Set 'NO SMKG' switch to "ON".
Set Switch (3) to "ON" and check that 6 V emergency lamps light. Set Switch (3) to "OFF".
YES
Check for 28 V d.c. at terminal 6 of Switch (5).
NO
Locate and rectify O/C in wiring between terminal block UM2077 on pilots' roof panel and Switch (5).
NO
YES
Locate and rectify O/C in wiring between CB (1) and terminal block UM2077 on pilots' roof panel.
YES
Check for 28 V d.c. output from CB (1).
Check for 28 V at terminal 5 of Switch (5).
NO
Renew Switch (5).
NO
YES
Renew CB (1).
Locate and rectify O/C in wiring between Switch (5) and exit signs.
CMB3351001HA10

Chart 105

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP IDENT	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
(1) Circuit breaker 28 V	-	1-213	L831	Map ref. Q22	24-50-00 R/I	
RB (2) Circuit breaker 28 V	-	15-215	L9058	Map ref. C13	24-50-00 R/I	
(3) EMERG switch	-	4-211	L832	Flight compartment roof panel	33-00-00 R/I	
(4) EMERG switch	-	1-221	L833	Fwd. steward's control panel	33-20-00 R/I	
(5) NO SMKG switch	-	4-211	W194	Flight compartment roof panel	33-00-00 R/I	

Component Identification
Table 101

EMERGENCY LIGHTING - MAINTENANCE PRACTICES

1. General

The Floor Proximity Lighting System is controlled by the existing Pilot's Emergency Light Switch and operates in a similar manner to the existing Emergency Lights, e.g. with the Pilot's Emergency Light Switch selected to "ARM", in the event that 28 V d.c. main power is lost, the Floor Proximity Lights will automatically switch ON.

2. Testing

A. There are two test modes.

(1) "OFF TEST" - used to test the system without energising the floodlights thus conserving battery life. The LED's described above are used to determine system serviceability. This test lasts for 15 minutes.

(2) "ON TEST" - used when testing the existing Overhead Emergency Lights and the Floor Proximity system. In this mode the Control Modules will transmit "OFF" commands for 15 minutes allowing sufficient time to check the LED monitors on the Aisle and Exit Units. The overhead Emergency Lights will be on during this period.

CAUTION: IF LEFT IN THIS TEST MODE FOR LONGER THAN 15 MINUTES THE FLOOR PROXIMITY LIGHTS WILL SWITCH ON.

B. "OFF TEST" Procedure

(1) With the Pilot's Emergency Switch selected to "OFF", select the switch from "OFF" to "ARM" then wait at least 5 seconds.

(2) Next, pausing not longer than 1/2 second at each selection cycle the switch as follows:

ON - ARM - ON - ARM - OFF

NOTE: The Floor Proximity system is now in "OFF TEST" mode and will remain so for 15 minutes. The Overhead Emergency Lights and the Floor Proximity Lights will not be illuminated.

To reset the system within this period, switch to "ARM", pause at least 1 second, then switch to "OFF", the Floor Proximity system will shutdown after approximately 15 seconds.

(3) Check Aisle and Exit Unit monitor LED's to ensure that at least two Control Module signals are being received by each unit and Battery condition/Floodlight Filament continuity are satisfactory.

NOTE: The LED's will blink in a random manner if a unit is serviceable.

(4) The "OFF TEST" will terminate automatically after 15 minutes.

C. "ON TEST" Procedure

(1) With Pilot's Emergency Light Switch selected to "OFF", switch from "OFF" to "ARM", then wait at least 5 seconds.

(2) Next, pausing not longer than 1/2 second at each selection, cycle the switch as follows:

ON - ARM - ON

NOTE: The Overhead Emergency lights will be ON and the Floor Proximity Lights will be OFF. The Floor Proximity Aisle units and the Exit Unit monitor LED's will be active. After 15 minutes the Floor Proximity system will switch ON.

To reset within this period switch to "ARM", pause at least 1 second then switch to "OFF". The Overhead Emergency Lights will extinguish and after 10 - 15 seconds the Floor Proximity system will shut down.

(3) Check the serviceability of the Overhead Emergency lights. Check Aisle and Exit Unit monitor LED's to ensure that at least two Control Module signals are being received by each unit and Battery condition/Floodlight Filament continuity are satisfactory.

NOTE: The LED's will blink in a random manner if a unit is serviceable.

(4) Complete the "ON TEST" procedure within 15 minutes.

CAUTION: IF THE ON TEST IS PROLONGED FOR LONGER THAN 15 MINUTES, THE NON RECHARGEABLE FLOODLIGHT BATTERIES FOR THE FLOOR PROXIMITY SYSTEM CAN BE DEPLETED TO UNACCEPTABLE LEVELS.

(5) Terminate the test by selecting "ARM", pause at least 1 second, then select "OFF".

3. Additional Information/Requirements

A. During the "OFF TEST" and "ON TEST" procedure, random short duration floodlight operation may occur. This phenomenon is acceptable.

B. To obviate damage to Aisle Light Floodlight wiring, care should be taken to ensure that lens assemblies are adequately supported when installing/removing aisle units to or from the seat brackets. The lens assembly swivels should be secured by use of the unit top cap and securing bolts (2 off) prior to sliding the unit into the seat brackets.

C. The Battery Condition monitor LED's will not blink after the floodlights have been in operation until the battery pack voltage has had time to recover. Even short term Floodlight operation will necessitate at least a 5 minute wait before the Battery Monitor LED's are re-instated.

D. It is emphasised that the Floor Proximity Lights are powered by limited life non-rechargeable batteries. Casual operation of the system is not permitted, the system is only to be checked at the routine intervals called up in the relevant maintenance schedules.

E. The pilot's Emergency Light Switch must not be left selected to the "ARM" position if the electrical power is disconnected from the aircraft. In such cases the switch must be selected to "OFF" prior to removal of electrical power.

F. The pilot's Emergency Light Switch must not be selected to "ON" except as required for routine testing.

EMERGENCY LIGHTING - SERVICING

1. General

A. Servicing of the Emergency Lighting System consists of battery charging in situ after installation.

Each battery pack contains a removable cadmium-nickel battery, Page type D366-01-100. In the event of a battery failure, the faulty battery can be replaced with a fully charged battery, i.e., one that has been initially charged on the bench for at least 16 h before installation, or an uncharged battery which must be charged in situ for a minimum period of 16 h after installation. Instructions for the replacement of batteries are contained in Removal/Installation.

RB B. When testing the Emergency Lighting System of aircraft with
RB Floor Proximity Lighting Systems installed (Mod 33D022), it is
RB important to note that the Pilots Emergency Light Switch will
RB operate both the Overhead Emergency Lighting System and the
RB Floor Proximity Lighting System. Extreme care must be
RB exercised, whenever testing of the Emergency Lighting System
RB is carried out to avoid depletion of the Floor Proximity
RB Lighting System NON-RECHARGEABLE battery packs.

2. Battery Packs - Charging In Situ

A. Prepare

RB CAUTION: "ON TEST" MUST BE USED WHENEVER IT IS NECESSARY TO
RB TEST THE OVERHEAD EMERGENCY LIGHTING.

(1) Make available electrical ground power as detailed in 24-41-00.

B. Charge

(1) Set the pilots' EMERG LIGHT switch on the flight
RB compartment roof panel to "OFF", and check that the steward's EMERG light switch on the forward steward's control panel is at NORMAL. In this condition all emergency lighting batteries are being trickle-charged.

(2) Allow the batteries to recharge for a minimum uninterrupted period of 16 h.

C. Conclusion

CAUTION: ALL CHECKS CARRIED OUT WITH EMERGENCY LIGHTS ON MUST BE COMPLETED AS QUICKLY AS POSSIBLE TO CONSERVE THE LIFE OF THE BATTERIES.

RB (1) The Attendant's Emergency Light Switch will cause the Floor Proximity Lights to be energised and deplete the batteries. It must therefore not be used to turn the Emergency Lights ON unless absolutely necessary.

RB (a) Use of the Emergency Light Test position of the Attendants panel Emergency Light Switch will cause the Floor Proximity Lights to come ON. This switch is not to be used for testing the existing Overhead Emergency Lights or Floor Proximity Lights.

RB (2) Whenever it is necessary to test the existing Overhead Emergency Lighting, use must be made of the "ON TEST" Mode of the Floor Proximity Light System, as detailed in 33-51-00 page 201.

(3) Switch off and disconnect electrical power as detailed in 24-41-00.

EMERGENCY LIGHTING - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

CAUTION: "ON TEST" MUST BE USED WHENEVER IT IS NECESSARY TO TEST THE OVERHEAD EMERGENCY LIGHTING.

CAUTION: ALL CHECKS WITH 6 V EMERGENCY LIGHTING ON MUST BE COMPLETED AS QUICKLY AS POSSIBLE TO CONSERVE THE LIFE OF THE BATTERIES.

1. General (Ref. Fig. 401)

This topic contains instructions for the renewal of 6 V and 28 V emergency light filaments and 6 V batteries, and for the removal and installation of emergency lanterns, exit direction signs, over-door exit signs, door threshold lamps and battery packs.

To renew door threshold lamp filaments necessitates the removal of the complete threshold lamp assembly from the associated passenger door structure.

Each battery pack with its group number and the associated lamps and signs which it supplies, is shown in Description and Operation, Table 1.

Instructions for the removal and installation of the pilots' and steward's emergency light control switches are contained in 33-00-00 and 33-20-00 respectively.

RB The attendants Emergency Light switch will cause the Floor
RB Proximity Lights to be energised and deplete the batteries and must
RB therefore not be used to turn the Emergency Lights to ON unless
RB absolutely necessary.

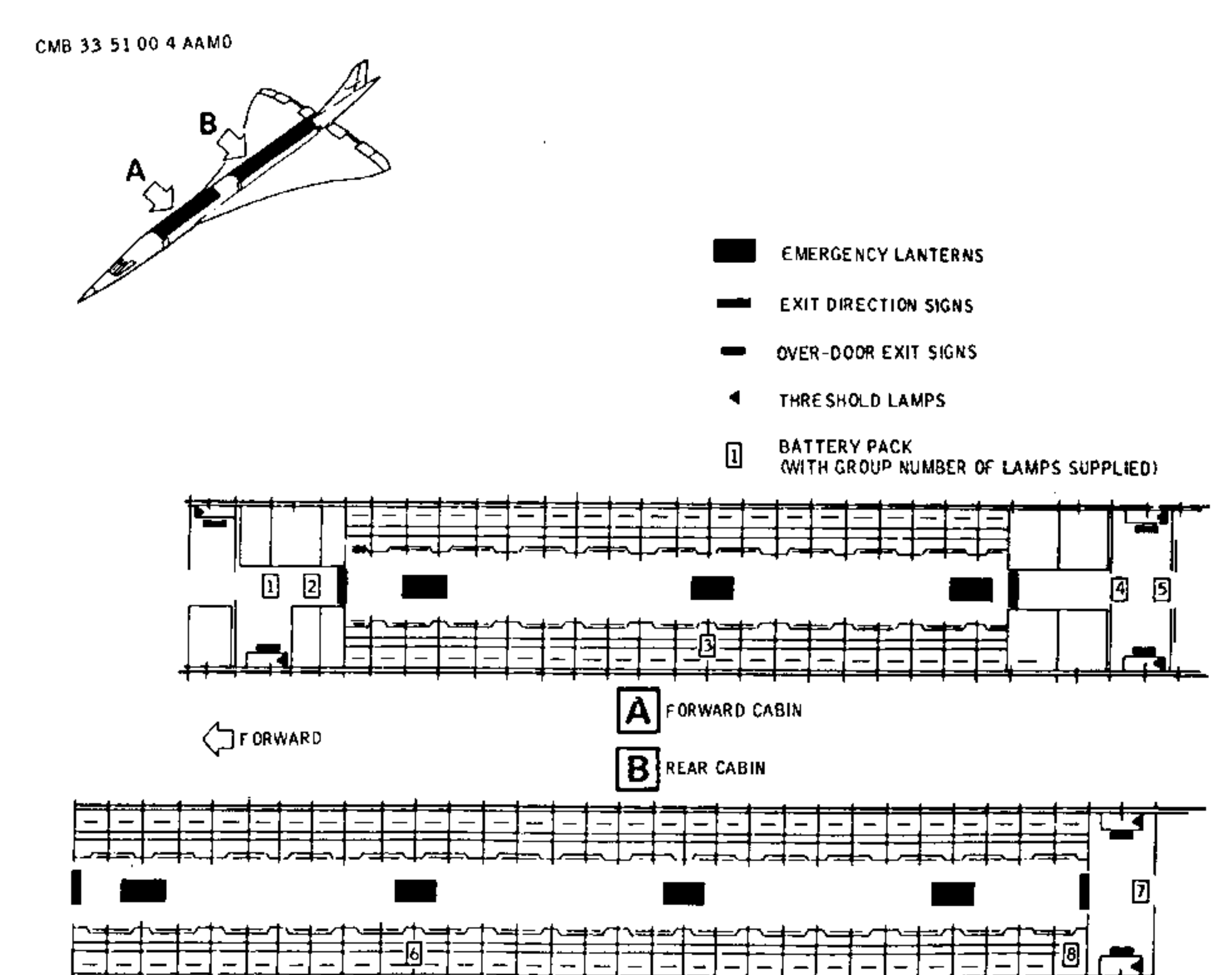
RB Use of the Emergency Light Test position of the Attendants panel
RB Emergency Light switch installed on Concorde will cause the Floor
RB Proximity Lights to come ON. This switch is not to be used for
RB testing the existing Overhead Emergency Lights or Floor Proximity
RB Lights.

2. Emergency Light Filaments - Renewal

A. Prepare

(1) Ensure that the pilots' EMERG light control switch and the NO SMKG switch on the flight compartment roof panel are at OFF and the steward's EMERG light control switch on the forward steward's control panel is at NORMAL.

(2) Gain access to the appropriate filament by removing the associated lens or cover from the lamp or sign as follows:-



Location of Equipment
Figure 401

(a) Emergency Lanterns

a1) Pull down the translucent lens to release the spring slips from the reflector and remove the lens.

(b) Exit Direction Signs

b1) Free the lower edge of the sign panel from its locating groove, (finger recesses are provided to facilitate this) and then ease the upper edge of the panel from its locating strip.

(c) Over-door Exit Signs

c1) For filaments behind the sign panel, pull the panel to release the spring clips from the lamp case and remove the panel. For filaments below the sign, release the two captive screws securing the lens to the case and remove the lens.

(d) Door Threshold Lamps

d1) See paragraph 7. Door Threshold Lamp.

B. Renew Filament

(1) For 28 V filaments, unscrew the filament retaining ring and remove the filament. Renew the filament and refit the retaining ring. For 6 V filaments, withdraw the filament from the holder and fit a replacement filament.

C. Conclusion

(1) Refit the associated lens or cover to the lamp or sign.

RB (2) For 28 V filaments, set the NO SMOKING switch to "ON" and
RB check that the appropriate filament is lit. Return the
RB switch to "OFF".

RB (3) For 6 V filaments, carry out "ON TEST" as detailed in
RB 33-51-00 page 201.

3. Emergency Light Batteries - Renewal (Ref. Fig. 402)

A. Equipment and Materials.

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the pilots' EMERG switch on the flight compartment roof panel and the steward's EMERG light switch on the forward steward's control panel are at OFF and NORMAL respectively.

RB (2) Deactivate Floor Proximity Lights (33-52-00 page 201).

RB (3) Trip the CABIN EMERG LTS EXIT SIGN SUP circuit breaker
RB L83, on panel 1-213, map ref. Q22. and EMERG LTS ARM/
RB CHARGE SUP. circuit breaker L9058, on panel 15-215, map
RB ref. C13, and fit safety clips.

R (4) Gain access to the appropriate battery pack as follows:-

R Before SB 33-019

(a) Groups Nos. 1 and 2, 4 and 5, and 7: mounted in the forward, centre and rear vestibule roof respectively.

a1) Release the clamping strips from the transverse joints of the appropriate ceiling panel and remove the panel.

R After SB 33-019 For A/C 001-004,

R (a) Groups Nos. 1 and 2, 4 and 5 and 7: mounted in the
R forward, centre and rear vestibule roof res-
R pectively.

R a1) For Groups Nos. 1 and 2, 4 and 5: release
R the clamping strips from the transverse joints
R of the appropriate ceiling panel and remove the
R panel.

R a2) For Group No. 7: open the access door on the
R rear vestibule ceiling panel.

(b) Groups Nos. 3 and 6: mounted between luggage bins on the left side of the forward cabin and the left side of the rear cabin respectively.

b1) Remove the screws securing the battery pack fairing to the bin support structure and unhinge the fairing from its mounting.

(c) Group No. 8: mounted behind the trim panel above the rear steward's control panel.

c1) Remove the trim panel; it is held in position by Velcro tape.

(d) Flight compartment battery pack: mounted in the flight compartment roof.

d1) Release the clamping strips from the appropriate ceiling panel and remove the panel.

C. Renew Battery

(1) Release the captive screws securing the battery pack cover to the case and remove the cover.

(2) Support the battery and release the captive screws securing the battery retainer. Disconnect the yellow and blue wire connectors from the battery and withdraw the battery and retainer from the case.

(3) Refit a replacement battery in the case and connect the yellow wire connector to the positive terminal and the blue wire connector to the negative terminal of the battery. Fit the retainer in the case and secure the retainer with the captive screws.

(4) Refit the battery pack cover and secure it with the captive screws.

(5) Refit the associated fairing or panel.

D. Conclusion

RB (1) Remove the circuit breaker clips and reset the CABIN EMERG
RB LTD & EXIT SIGN SUP circuit breaker, and EMERG LTS
RB ARM/CHARGE SUP. circuit breaker.

RB (2) Set the pilots' EMERG switch to "ARM".

RB (3) Trip the EMERG LTS ARM/CHARGE SUP. circuit breaker L9058,
RB on panel 15-215, map ref. C13, and check that the 6 V
RB filaments in the group of lamps supplied from the battery
RB pack are lit.

RB (4) Reset the EMERG LTS ARM/CHARGE SUP. circuit breaker and
RB return the pilots' switch to "OFF".

RB (5) Reactivate the Floor Proximity Lights (33-52-00 Page 201).

RB (6) Carry out "OFF TEST" procedure (33-52-00 Page 501).

4. Emergency Lantern (Ref. Fig. 403)

CAUTION: OWING TO THE PROXIMITY OF A COMPASS COUPLER FLUX VALVE, WHICH IS HIGHLY SENSITIVE TO MAGNETIC INTERFERENCE, NON-MAGNETIC TOOLS MUST BE USED TO REMOVE AND INSTALL THE EMERGENCY LANTERN THIRD FROM THE FORWARD END OF THE REAR CABIN ROOF.

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the pilots' EMERG switch on the flight compartment roof panel and the steward's emerg switch on the forward steward's control panel are at OFF and NORMAL respectively.

RB (2) Deactivate Floor Proximity Lights (33-52-00 page 201).

RB (3) Trip the EMERG LTS ARM/CHARGE SUP. circuit breaker
RB L9058 on panel 15-215, map ref. C13, and the CABIN EMER
RB LTS & EXIT SIGN SUP. circuit breaker L831 on panel 1-213,
RB map ref. Q22, and the NO SMOKING SUP circuit breaker
R WB192, on panel 1-213, map ref. L9, and fit safety clips.

C. Remove

(1) Pull down the emergency lantern lens to release the spring clips from the lantern reflector and remove the lens.

(2) Remove the reflector securing screw and hinge the reflector down to gain access to the flying lead connections.

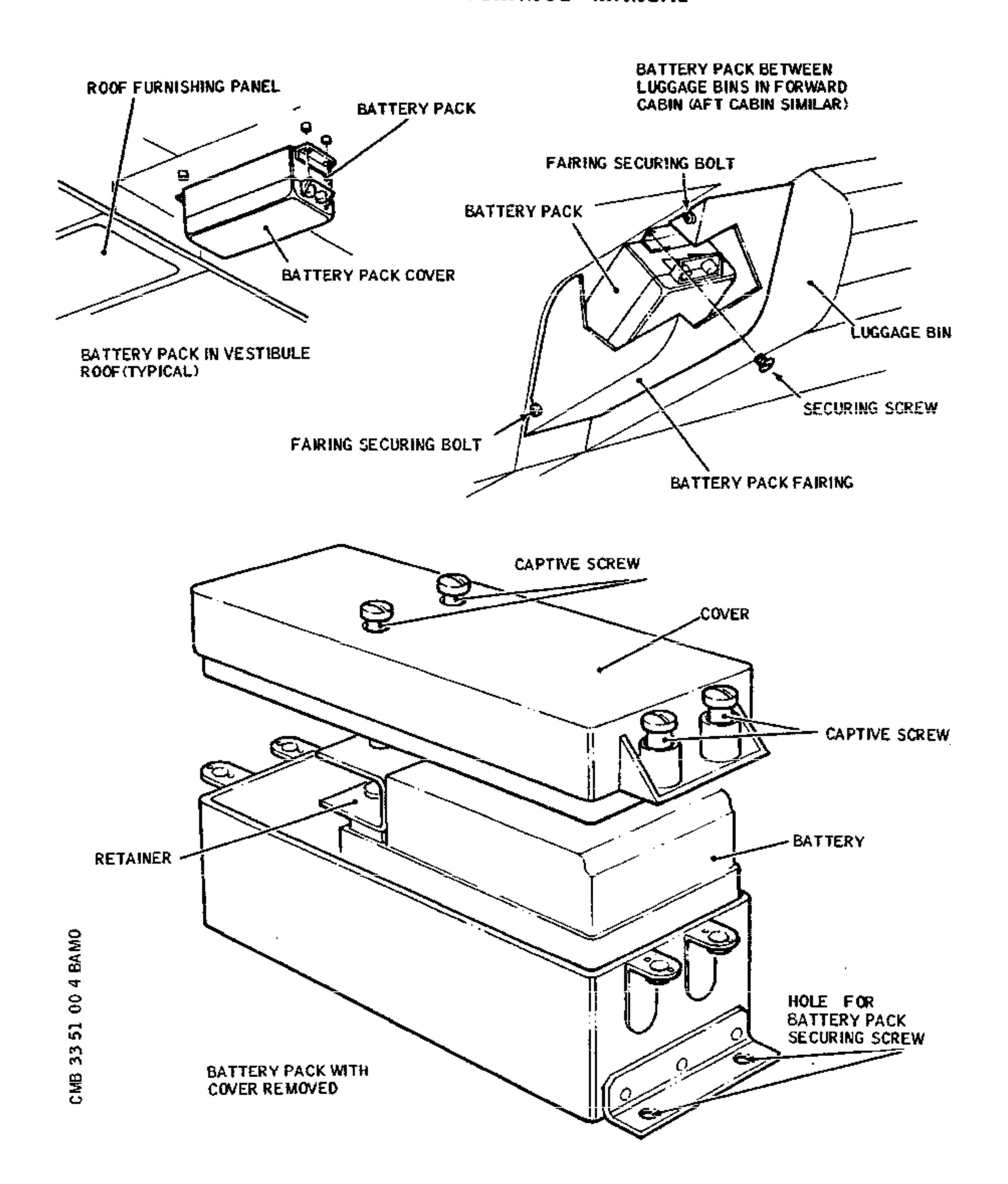
(3) Using a suitable tool disconnect the flying leads from the module block.

(4) Loosen the hinge securing screws and washers and remove the lantern assembly from the roof.

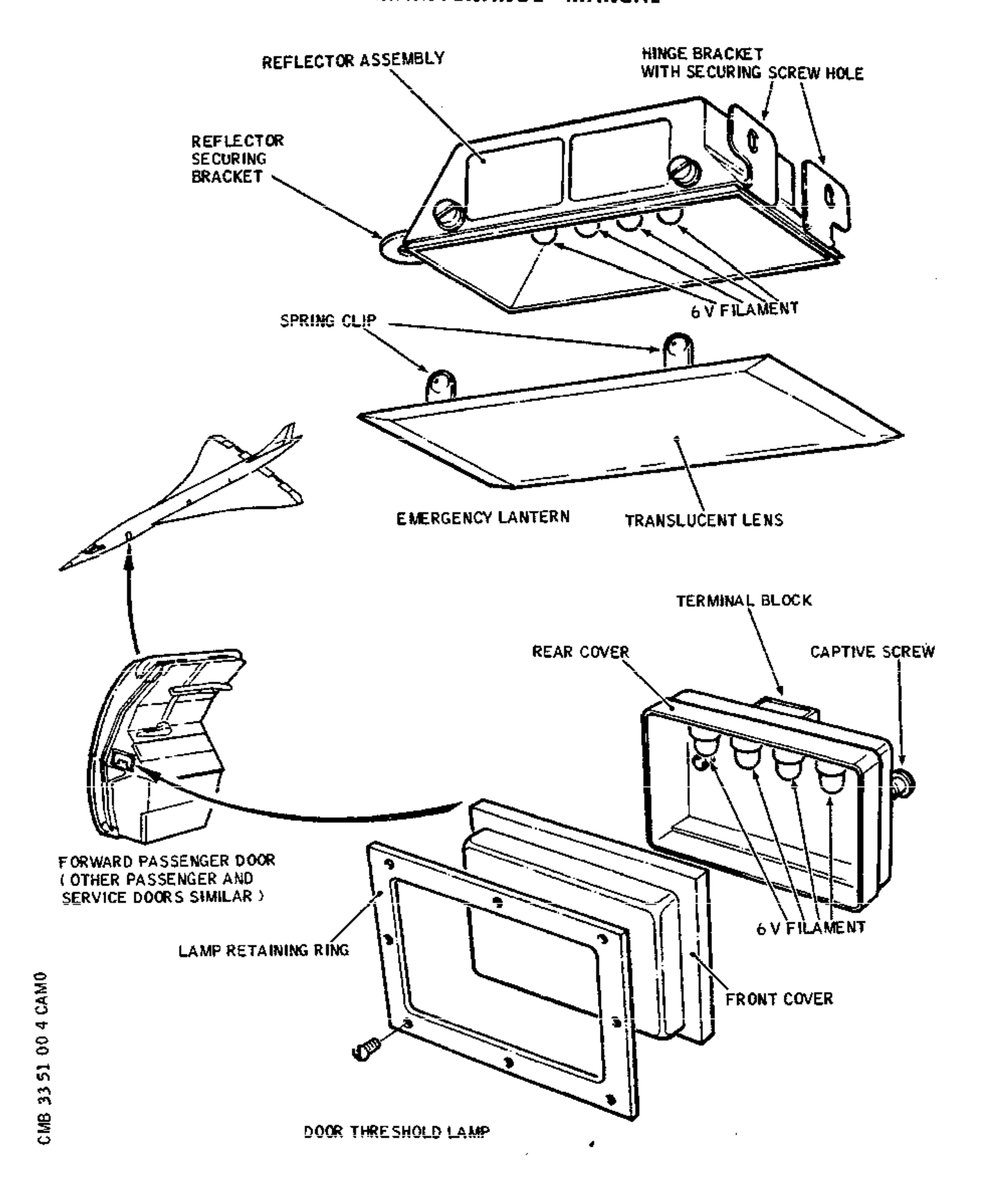
D. Install

(1) Comply with the electrical safety precautions.

(2) Support the emergency lantern and secure the hinge to its mounting with the screws and washers.



Battery Pack - Installation
Figure 402



- Emergency Lantern and Door Threshold Lamp -
Installation
Figure 403

(3) Using a suitable tool, connect the flying leads to the terminal block, ensuring that the connections are made in accordance with the cable identifications and the applicable wiring diagram.

(4) Close the reflector and secure it with the securing screw.

(5) Fit the lens to the reflector and push the lens up to engage the spring clips.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

RB (2) Carry out System A circuit - Operational Test, detailed
RB in 33-51-00 Page 501.

(3) Switch off and disconnect electrical ground power as detailed in 24-41-00.

5. <u>Exit Direction Sign</u> (Ref. Fig. 404)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the pilots' EMERG switch and the NO SMKG switch on the flight compartment roof panel are at OFF, and the steward's EMERG switch on the forward steward's control panel is at NORMAL.

RB (2) Deactivate Floor Proximity Lights (33-52-00 page 201).

RB (3) Trip the EMERG LTS ARM/CHARGE SUP. circuit breaker L9058
RB on panel 15-215, map ref. C13, and the CABIN EMER LTS &
RB EXIT SIGN SUP. circuit breaker L831 on panel 1-212, map
RB ref. Q22, and the NO SMOKING SUP. circuit breaker W192,
RB on panel 1-213, map ref. L9, and fit safety clips.

C. Remove

(1) Using the finger recesses provided, free the lower edge of the sign panel from the locating groove in the exit direction sign, ease the upper edge of the panel from its retaining strip and remove the panel.

(2) Remove the filaments at each end of the lamp case to gain access to the quick-release fasteners.

(3) Release the quick-release fasteners securing the lamp case to the bulkhead and withdraw the case sufficiently to gain access to the electrical connector.

(4) Disconnect the electrical connector and remove the exit direction sign from the bulkhead.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the exit direction sign and connect the electrical connector to the sign, ensuring that the mating surfaces are clean and undamaged.

(3) Position the exit direction sign on its mounting and secure it with the quick-release fasteners.

(4) Refit the filaments in the lamp case.

(5) Fit the upper edge of the sign panel in the retaining strip and press the bottom edge of the panel into its locating groove.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

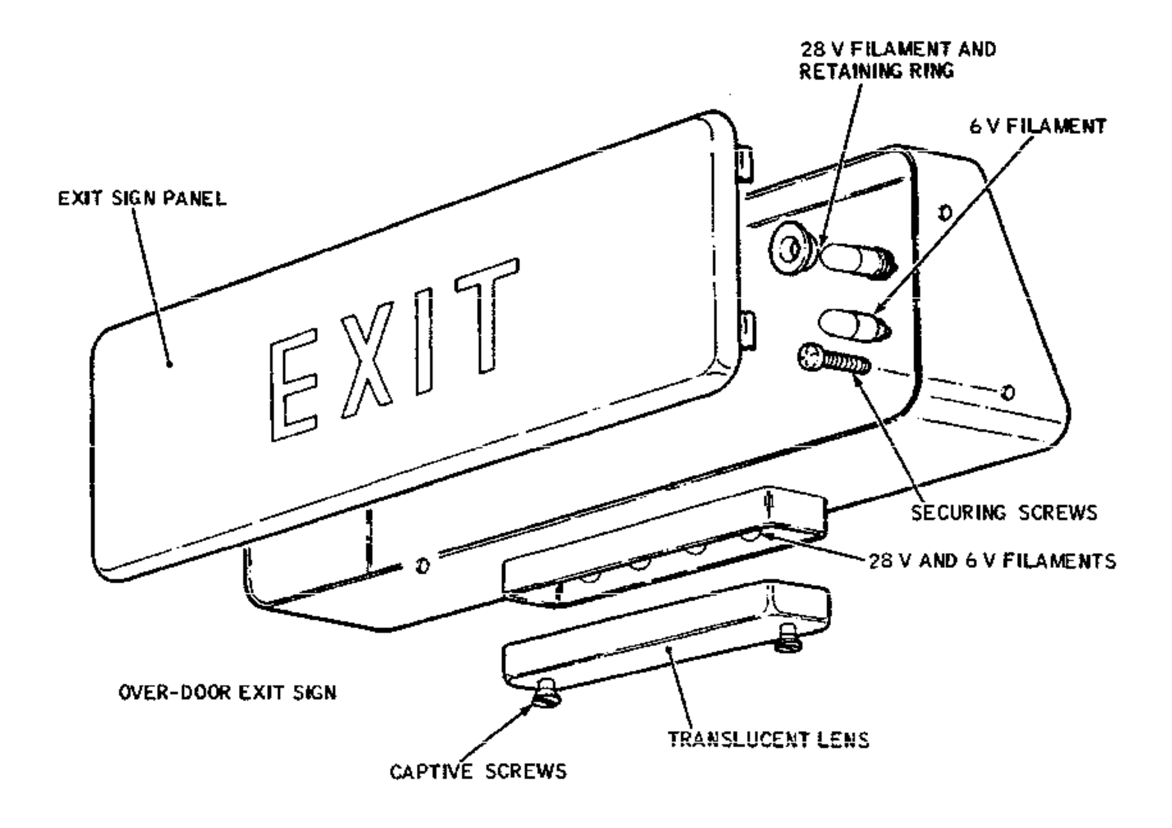
(2) Remove the safety clips and reset the circuit breakers tripped before removal.

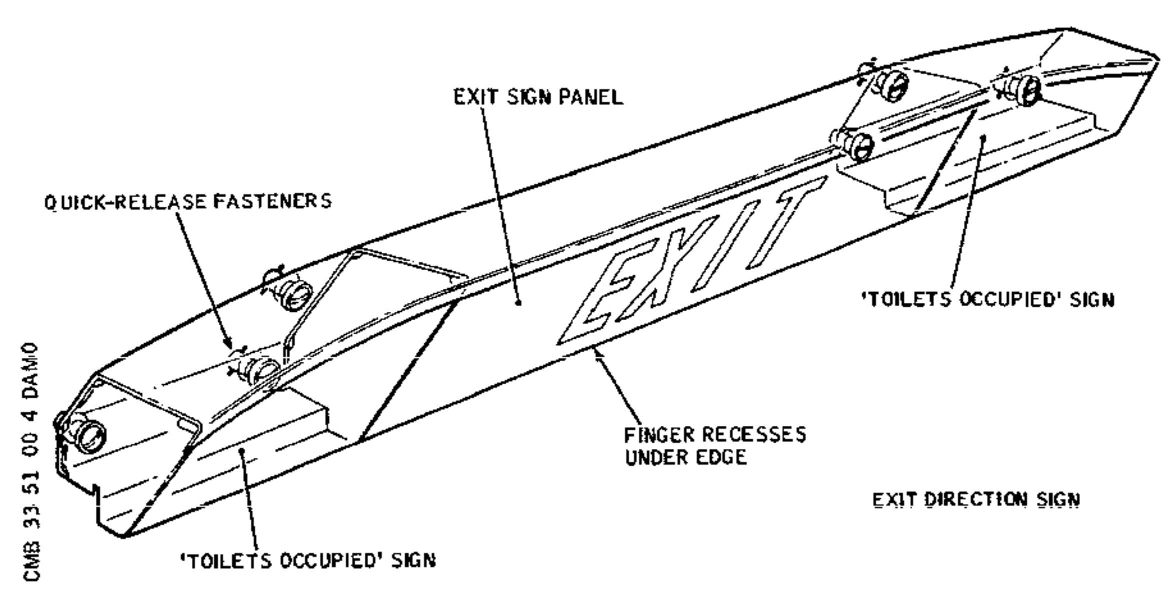
RB (3) Reactivate the Floor Proximity Lights (33-52-00 page 201).

RB (4) Carry out "OFF TEST" ref. 33-51-00 page 201 to check the
RB Floor Proximity Lighting system.

RB (5) Carry out "ON TEST" ref. 33-51-00 page 201 to check the
RB Overhead Emergency Lighting.

RB (6) Set the NO SMKG switch to "ON" and check that all the 28 V filaments in the appropriate exit direction sign are lit. Return the switch to "OFF".





Exist Signs - Installation
Figure 404

R (7) For the exit direction sign at the forward end of the forward cabin, close and bolt the forward toilet door and check that the 'toilets occupied' signs are lit.

R (8) For exit direction signs at the forward end of the rear cabin and the rear end of the forward cabin, close and bolt all the centre toilet doors and check that the 'toilets occupied' signs in the appropriate exit direction sign are lit.

R (9) Switch off and disconnect electrical ground power as detailed in 24-41-00.

6. Over-door Exit Sign (Ref. Fig. 404)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the pilots' EMERG switch and the NO SMKG switch on the flight compartment roof panel are at OFF, and the steward's EMERG switch on the forward steward's control panel is at NORMAL.

RB (2) Deactivate Floor Proximity Lights (33-52-00 page 201).

RB (3) Trip the EMERG LTS ARM/CHARGE SUP. circuit breaker L9058
RB on panel 15-215, map ref. C13, and the CABIN EMER LTS &
RB EXIT SIGN SUP. circuit breaker L831 on panel 1-213, map
RB ref. Q22, and the NO SMOKING SUP. circuit breaker W192,
RB on panel 1-213, map ref. L9, and fit safety clips.

C. Remove

(1) Pull the sign panel to release the spring clips from the the case and remove the panel.

(2) Remove the appropriate filaments to gain access to the securing screws.

(3) Remove the screws and washers securing the exit sign assembly to the aircraft structure and withdraw the assembly sufficiently to gain access to the electrical connector.

(4) Disconnect the electrical connector and remove the sign assembly.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the sign assembly and connect the electrical connector to the sign, ensuring that the mating surfaces are clean and undamaged.

(3) Place the sign on its mounting and secure it with the screws and washers.

(4) Refit the filaments in the case.

(5) Fit the sign panel to the case and press inward to engage the spring clips.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clips and reset the circuit breakers tripped before removal.

RB (3) Reactivate the Floor Proximity Lights (33-52-00 page 201).

RB (4) Carry out "OFF TEST" ref. 33-51-00 page 201 to check the
RB Floor Proximity Lighting system.

RB (5) Carry out "ON TEST" ref. 33-51-00 page 201 to check the
RB Overhead Emergency Lighting.

R (6) Set the NO SMKG switch to "ON" and check that all the 28 V filaments in the appropriate over-door exit sign are lit. Return the switch to "OFF".

R (7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

7. Door Threshold Lamp (Ref. Fig. 403)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the pilots' EMERG switch on the flight compartment roof panel and the steward's EMERG switch on the forward steward's control panel are at OFF and NORMAL respectively.

RB (2) Deactivate Floor Proximity Lights (33-52-00 page 201).

(3) Trip the CABIN EMERG LTS EXIT SIGN SUP circuit breaker L831, on panel 1-213, map ref. Q22. and EMERG LTS ARM/ CHARGE SUP. circuit breaker L9058, on panel 15-215, map ref. C 13, and fit safety clips.

C. Remove

(1) Unscrew the screws securing the door threshold lamp retaining ring to the door structure and remove the retaining ring.

(2) Withdraw the lamp assembly from the door sufficiently to gain access to the terminal block.

(3) To renew a filament, release the captive screws securing the front cover to the rear cover and separate the covers to gain access to the filaments.

(4) To remove the lamp, disconnect the electrical cables from the terminal block and remove the assembly from the door.

D. Install

(1) Comply with the electrical safety precautions.

(2) Ensure that four 6 V filaments are mounted in the rear cover, and secure the front cover to rear cover with the captive screws.

(3) Support the lamp assembly and connect the electrical cables to the terminals, ensuring that the connections are made in accordance with cable identifications and the applicable wiring diagram.

(4) Place the lamp assembly in its mounting in the door structure and secure it with the retaining ring.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the circuit breaker tripped before removal.

RB (3) Reactivate the Floor Proximity Lights (33052-00 page
RB 201).

RB (4) Carry out "OFF TEST" ref. 33-51-00 page 201 to check the
RB Floor Proximity Lighting system.

RB (5) Carry out "ON TEST" ref. 33-51-00 page 201 to check the
RB Overhead Emergency Lighting.

(6) As detailed in 24-41-00.

8. Emergency Battery Pack (Ref. Fig. 402)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Ensure that the pilots' EMERG switch on the flight compartment roof panel and the steward's EMERG switch on the forward steward's control panel are at OFF and NORMAL respectively.

RB (2) Deactivate Floor Proximity Lights (33-52-00 page 201).

RB (3) Trip the CABIN EMERG LTS EXIT SIGN SUP circuit breaker
RB L831, on panel 1-213, map ref. Q22. and EMERG LTS ARM/
RB CHARGE SUP. circuit breaker L9058 on panel 15-215, map ref.
RB C13, and fit safety clips.

(4) Gain access to the appropriate battery pack as follows:-

R Before SB 33-019

(a) Groups Nos.1 and 2, 4 and 5, and 7: mounted in the forward, centre and rear vestibule roof respectively.

a1) Release the clamping strips from the transverse joints of the appropriate ceiling panel and remove the panel.

R After SB 33-019 For A/C 001-004,

R (a) Groups Nos.1 and 2, 4 and 5 and 7: mounted in the
R forward, centre and rear vestibule roof respectively.

R a1) For Groups Nos.1 and 2, 4 and 5: release the
R clamping strips from the transverse joints of the
R appropriate ceiling panel and remove the panel.

R a2) For Group No.7: open the access door on the rear
R vestibule ceiling panel.

(b) Groups Nos.3 and 6: mounted between luggage bins on the left side of the forward cabin and the left side of the rear cabin respectively.

b1) Remove the screws securing the battery pack fairing to the bin support structure and unhinge the fairing from its mounting.

(c) Group No.8: mounted behind the trim panel above the rear steward's control panel.

c1) Remove the trim panel; it is held in position by Velcro tape.

(d) Flight compartment battery pack: mounted in the flight compartment roof.

d1) Release the clamping strips from the appropriate ceiling panel and remove the panel.

C. Remove

(1) Disconnect the electrical connector from the battery pack.

(2) Support the battery pack and remove the screws and washers securing the battery pack to its mounting brackets. Remove the pack from its mounting.

D. Install

(1) Comply with the electrical safety precautions.

(2) Support the battery pack on its mounting brackets and secure it with the screws and washers.

(3) Connect the electrical connector to the battery pack, ensuring that the mating surfaces are clean and undamaged.

(4) Refit the associated fairing or panel.

E. Conclusion

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Remove the safety clip and reset the circuit breaker tripped before removal.

(3) Set the pilots' EMERG switch to "ARM".

(4) Trip the CABIN EMER LTS BAT CHG 7 EXIT SIGN SUP circuit breaker L831, on panel 1-213, map ref. Q22, and check that the 6 V filaments in the group of lamps supplied from the battery pack are lit.

(5) Reset the CABIN EMER LTS BAT CHG 7 EXIT SIGN SUP circuit breaker.

(6) Set the pilots' EMERG switch to "OFF".

(7) Switch off and disconnect electrical ground power as detailed in 24-41-00.

EMERGENCY LIGHTING - ADJUSTMENT/TEST

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

RB CAUTION: DO NOT USE STEWARDS PANEL EMERGENCY LIGHT SWITCH TO TEST
RB EMERGENCY LIGHTS.

1. General

This topic contains test procedures detailed under separate headings as follows:

System A Filaments - Operational Test (Ref. para.2.)

Battery Packs - Condition Test (Ref. para.3.)

Battery Packs - Capacity Test (Ref. para.4.)

System A Circuit - Operational Test (Ref. para.5.)

System B Circuit - Operational Test (Ref. para.6.)

The battery packs are tested in situ.

To effect a complete Operational Test of the emergency Lighting, all three Operational Tests must be carried out.

System A provides 6 V emergency lighting for the passenger cabins and the vestibules, and 6 V to illuminate the door exit signs, door exit areas and exit direction signs, if the aircraft d.c. essential supplies fail. System B provides 28 V standby 'dim' lighting in the passenger cabins, vestibules and toilets if the aircraft a.c. supply feeding the main lighting system fails, and 28 V to illuminate the door exit signs, door exit areas and exit direction signs, when required, by the manual operation of a control switch.

Functional and System Tests are not considered necessary in this application.

2. System A Filaments - Operational Test

A. Prepare to Test System A Filaments

CAUTION: ALL CHECKS WITH EMERGENCY LIGHTS ON MUST BE COMPLETED AS QUICKLY AS POSSIBLE TO CONSERVE THE LIFE OF THE BATTERIES.

RB CAUTION: TO PREVENT FLOOR PROXIMITY LIGHT ACTIVATION USE ONLY
RB "ON TEST" PROCEDURE

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Ensure that the EMERG lights control switch on the forward steward's control panel is at NORMAL.

(3) Ensure that the EMERG lights control switch on the flight compartment roof panel is at OFF, and check that the filament in the toggle is lit.

B. Test System A Filaments

RB CAUTION: OBSERVE "ON TEST" PROCEDURE EXACTLY TO PREVENT
RB INADVERTENT FLOOR PROXIMITY LIGHT OPERATION.

RB (1) Carry out "ON TEST" procedure (Ref. 33-51-00 page 201).
RB Check that:

RB (a) The filament lamp in the pilots toggle switch is
RB extinguished when the switch is in the ARM position.

RB (b) All 6 V filaments in the emergency lamps, lanterns
RB and exit signs listed in Table 501 are lit, removing
RB covers (Ref. Removal/Installation) where necessary.

RB CAUTION: ON TEST MUST BE TERMINATED WITHIN 15 MINUTES TO
RB AVOID INADVERTENT FLOOR PROXIMITY LIGHT ACTIVATION.

RB (2) Terminate "ON TEST" (Ref. 33-51-00 page block 200).

LOCATION OF FILAMENTS	QTY. OF 6 V FILAMENTS IN EACH LAMP
Flight compartment -	
Forward roof lamp	3
Rear roof lamp	3
Forward passenger door -	
'Exit ' sign	7
Threshold lamp	4
Forward service door -	
'Exit' sign	7
Threshold lamp	4
Forward vestibule -	
Exit direction sign	5
Forward cabin -	
Emergency roof lantern (3)	4
Central passenger door -	
'Exit' sign	7
Threshold lamp	4
Central service door -	
'Exit' sign	7

LOCATION OF FILAMENTS	QTY. OF 6 V FILAMENTS IN EACH LAMP
Threshold lamp	4
Centre vestibule -	
Exit direction sign (forward)	5
Exit direction sign (rear)	5
Rear cabin -	
Emergency roof lantern (4)	4
Rear left door -	
'Exit' sign	7
Threshold lamp	4
Rear right door -	
'Exit' sign	7
Threshold lamp	4
Rear vestibule -	
Exit direction sign	5

Emergency Filaments - System A
Table 501

C. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

R 3. Battery Packs - Condition Test

R A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clip	-

R B. Prepare to Test Battery Packs Condition

R (1) Make available electrical ground power as detailed in 24-41-00.

RB CAUTION: ENSURE FLOOR PROXIMITY LIGHTS ARE DEACTIVATED.

RB (2) Deactivate Floor Proximity Lights (33-52-00 page 201).

RB (3) Set the pilots' EMERG lights control switch on the flight compartment roof panel to "ARM" and check that the EMERG lights control switch on the forward steward's control panel is at NORMAL.

C. Test Battery Packs Condition

RB (1) Trip the CABIN EMER LTS SUP circuit breaker L9058 on
RB panel 15-215, map ref. C13, and fit a safety clip.

(2) Check that the 6 V emergency lighting system is activated and allow the lights to remain lit for a period of 4 min. During this period, check that all filaments are lit. Renew any faulty filaments as detailed in Removal/Installation.

(3) After 4 min, conclude the test by setting the pilots' EMERG lights control switch to "OFF".

(4) If a group of emergency lights goes off within the 4 min period of activation, replace the associated battery with a fully charged battery.

(5) Remove the safety clip and reset the circuit breaker tripped in operation (1).

RB (6) Set the pilots' EMERG lights control switch to "OFF" and allow the batteries to recharge for a minimum uninterrupted period of 2 h.

D. Conclusion

RB (1) Reactivate the Floor Proximity Lights (33-52-00 page
RB 201).

RB (2) Carry out "OFF TEST" procedure (33-52-00 page block 401).

RB (3) Switch off and disconnect electrical ground power as detailed in 24-41-00.

4. Battery Packs - Capacity Test

NOTE: The batteries must be in a continuous charging state for a minimum period of 16 h prior to the commencement of in-situ capacity testing.

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clip	-

B. Prepare to Test Battery Capacity

(1) Make available electrical ground power as detailed in 24-41-00.

RB CAUTION: ENSURE FLOOR PROXIMITY LIGHTS ARE DEACTIVATED.

RB (2) Deactivate Floor Proximity Lighting (33-52-00 page 201).

RB (3) Set the pilots' EMERG lights control switch on the flight compartment roof panel to "ARM" and check that the EMERG lights control switch on the forward steward's control panel is at NORMAL.

C. Test Battery Capacity

RB (1) Trip the EMERG LTS ARM CHRG SUP circuit breaker L9058
RB on panel 15-215, map ref. C13, and fit a safety clip.

(2) Check that the 6 V emergency lighting system is activated and that all 6 V filaments are lit. Renew any faulty filaments as detailed in Removal/Installation.

(3) Check that all filaments remain lit for 20 min.

(4) If a group of emergency lights goes off within 20 min of activation, replace the associated battery with a fully charged battery.

(5) Set the pilots' EMERG lights control switch to "OFF".

(6) Remove the safety clip and reset the circuit breaker tripped in operation (1).

(7) Restore the emergency battery system to the fully charged state by carrying out either of the following procedures:

(a) Set the pilots' EMERG lights control switch to "ARM" and allow the batteries to recharge for a minimum uninterrupted period of 16 h; on completion of charging, set the pilots' EMERG lights control switch to "OFF".

(b) Alternatively, replace all the batteries with fully charged batteries.

NOTE: If procedure (b) is carried out, further in-situ charging is not necessary.

D. Conclusion

(1) Carry out a System A Filaments - Operational Test (Ref. para.2.)

RB (2) Reactivate Floor Proximity Lights (33-52-00 page block
RB 200).

RB (3) Carry out an "OFF TEST" procedure (33-52-00 page block 500).

RB (4) Switch off and disconnect electrical ground power as detailed in 24-41-00.

5. System A Circuit - Operational Test

A. Prepare to Test System A Circuit

CAUTION: ALL CHECKS WITH EMERGENCY LIGHTS ON MUST BE COMPLETED AS QUICKLY AS POSSIBLE TO CONSERVE THE LIFE OF THE BATTERIES.

(1) Make available electrical ground power as detailed in 24-41-00.

RB (2) Deactivate Floor Proximity Lights (33-52-00 page 201).

RB CAUTION: ENSURE FLOOR PROXIMITY LIGHTS ARE DEACTIVATED
RB BEFORE PROCEEDING WITH OPERATIONAL TEST.

RB (3) Ensure that the EMERG lights control switch on the forward steward's control panel is at NORMAL.

RB (4) Ensure that the EMERG lights control switch on the flight compartment roof panel is at OFF, and check that the filament in the toggle is lit.

B. Test System A Circuit

RB (1) Set the flight compartment EMERG lights control switch to
RB "OFF". Check that all emergency lights and signs are
RB extinguished, and the toggle filament is illuminated.

(2) Set the flight compartment EMERG lights control switch to
RB "ARM". Check that all emergency lights and signs remain
RB extinguished, and the toggle filament is extinguished.

RB (3) Trip the EMERG LTS ARM/CHARGE SUP circuit breaker L9058
RB on panel 15-215, map ref. C13. Check that the emergency
RB lamps, lanterns and exit signs listed in Table 501, are
RB lit.

RB (4) Set the EMERG lights control switch on the flight
RB compartment roof panel to "OFF". Check that all emergency
RB lights and signs are extinguished.

RB (5) Set the EMERG lights control switch on the forward steward's control panel to "ON" and check that the emergency lamps, lanterns and exit signs listed in Table 501 are lit.

RB (6) Set the EMERG lights control switch on the flight compartment roof panel to "ON", and set the EMERG lights control switch on the forward steward's panel to "NORMAL". Check that the emergency lamps, lanterns and exit signs
RB remain lit, and the switch toggle filament remains
RB extinguished.

RB (7) Set the EMERG lights control switch on the flight
RB compartment roof panel to "ARM", then reset circuit breaker
RB tripped in (3). Check that all emergency lamps, lanterns,
RB and signs are extinguished.

RB (8) Set the EMERG lights control switch on the flight compartment roof panel to "OFF" and check that all
RB emergency lamps, lanterns, and signs remain extinguished.

C. Conclusion

RB (1) Reactivate Floor Proximity Lighting (33-52-00 page block
RB 200).

RB (2) Carry out "OFF TEST" procedure (33-52-00 page 401).

RB (3) Switch off and disconnect electrical ground power as detailed in 24-41-00.

6. System B Circuit - Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clips	-

B. Prepare

(1) Make available electrical ground power as detailed in 24-41-00.

C. Test Exit Sign Filaments

(1) Set the NO SMKG switch on the flight compartment roof panel to "ON". Check that the six 28 V filaments in each of the door exit signs and the vestibule exit direction signs are lit.

(2) Set the NO SMKG switch to "OFF" and check that the door exit sign filament lights and the vestibule exit direction sign filament lights are extinguished.

(3) Carry out an Operational Test of the Passenger System (Ref. 35-21-00, Adjustment/Test) and check that the six 28 V filaments in each of the door exit signs and the vestibule exit direction signs are lit when the emergency oxygen services relay is energized.

D. Test Cabin Dim Lighting

(1) At the forward steward's control panel, set the FWD cabin SELECT switch to "FULL" and the FWD cabin CONTROL switch to "BRIGHT". Check that the roof and the wall R fluorescent lighting in the forward cabin is on and that the filament lighting is off. Set the switches to "OFF".

(2) Repeat operation (1) with respect to the aft cabin, using the AFT cabin CONTROL and SELECT switches.

(3) Trip the appropriate roof lighting supply circuit breaker listed below, and fit a safety clip.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FWD CABIN CEILING LTS SUP	14-215	L453	D10
AFT CABIN RH CEILING LTS SUP	14-215	L454	C10

(4) Set the FWD cabin SELECT switch to "FULL" and the FWD cabin CONTROL switch to "BRIGHT". Check that the filament and wall fluorescent lighting in the forward cabin is on and the roof fluorescent lighting is off. Set both switches to "OFF". Check that the filament lighting is off.

(5) Trip the appropriate wall lighting supply circuit breaker listed below, and fit a safety clip.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FWD CABIN WALL LTS SUP	14-216	L452	C9
AFT CABIN WALL LTS SUP	14-216	L451	B9

(6) Set the FWD cabin SELECT switch to "FULL" and the FWD cabin CONTROL switch to "BRIGHT". Check that the filament lighting in the forward cabin is on and that the wall and roof fluorescent lighting is off. Set both switches to "OFF".

(7) Remove the safety clips and reset the associated cabin roof and wall fluorescent lighting supply circuit breakers.

(8) Repeat operations (3) to (7) with respect to the aft cabin, using the AFT cabin CONTROL and SELECT switches.

(9) Set the FWD cabin CONTROL switch to "DIM". Check that the forward cabin filament lighting is on, and that the roof and wall fluorescent lighting is off, regardless of the position of the FWD cabin SELECT switch. Return the CONTROL switch to "OFF".

(10) Repeat operation (9) with respect to the aft cabin, using the AFT cabin CONTROL and SELECT switches.

(11) Set the NO SMKG switch, on the flight compartment roof panel, to "ON". Check that the filament lighting in the forward and aft cabins is on. Return the switch to "OFF", and check that the filament lighting is extinguished.

E. Test Toilet Dim Lighting

(1) Trip the a.c. power failure relay supply circuit breaker, FLT DECK ROOF LTS SUP, L232, on panel 14-215, map ref.C11, and fit a safety clip.

(2) In each toilet check that the standby filament is lit.

(3) Remove the safety clip and reset the circuit breaker tripped in operation (1).

(4) Check that the standby filament light in each toilet is extinguished.

(5) Set the NO SMKG switch on the flight compartment roof panel to "ON" and check that the filament lighting in the toilets is on. Return the switch to "OFF" and check that the filament lighting is extinguished.

F. Test Vestibule Dim Lighting

(1) Set the VESTIBULE lights control switch on the forward steward's control panel to "DIM" and check that the two filament lamps in each of the two forward vestibule lanterns are lit.

(2) Set the VESTIBULE lights control switch to "BRIGHT" and check that the filament lights are extinguished and the two fluorescent tubes in each of the forward vestibule lanterns are lit.

(3) Set the VESTIBULE lights control switch to "OFF" and check that the filament and fluorescent lights in each lantern are extinguished.

(4) Repeat operations (1) to (3) from the centre and rear vestibule steward's panel, in turn, to test the associated centre and rear vestibule lantern.

(5) Trip the a.c. power failure relay supply circuit breaker, FLT DECK ROOF LTS SUP, L232, on panel 14-215, map ref.C11, and fit a safety clip.

(6) Set the VESTIBULE lights control switch on the forward steward's panel to "DIM". Check that the two filament lamps in each of the two forward vestibule lanterns are lit.

(7) Set the VESTIBULE lights control switch to "BRIGHT". Check that the filament lamps in the vestibule lanterns remain lit, and that the fluorescent tubes remain unlit.

(8) Remove the safety clip and reset the a.c. power failure circuit breaker. Check that the filament lamps in each forward vestibule lantern are extinguished, and the fluorescent tubes are lit.

(9) Set the VESTIBULE lighting control switch to "OFF".

(10) Repeat operations (1) to (7) from the centre and rear steward's panels, in turn, to test the associated centre and rear vestibule lantern.

(11) Set the NO SMKG switch on the flight compartment roof panel to "ON" and check that the filament lighting in the vestibules is on. Return the switch to "OFF" and check that the filament lighting is extinguished.

G. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

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EMERGENCY ESCAPE PATH FLOOR PROXIMITY LIGHTING SYSTEM TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-00-00.

1. General

The trouble shooting guide utilises "zones", where a zone is the transmission footprint of a given transmitter.

2. Preparation

A. Ensure that the associated circuit breakers are set (Ref. Table 102).

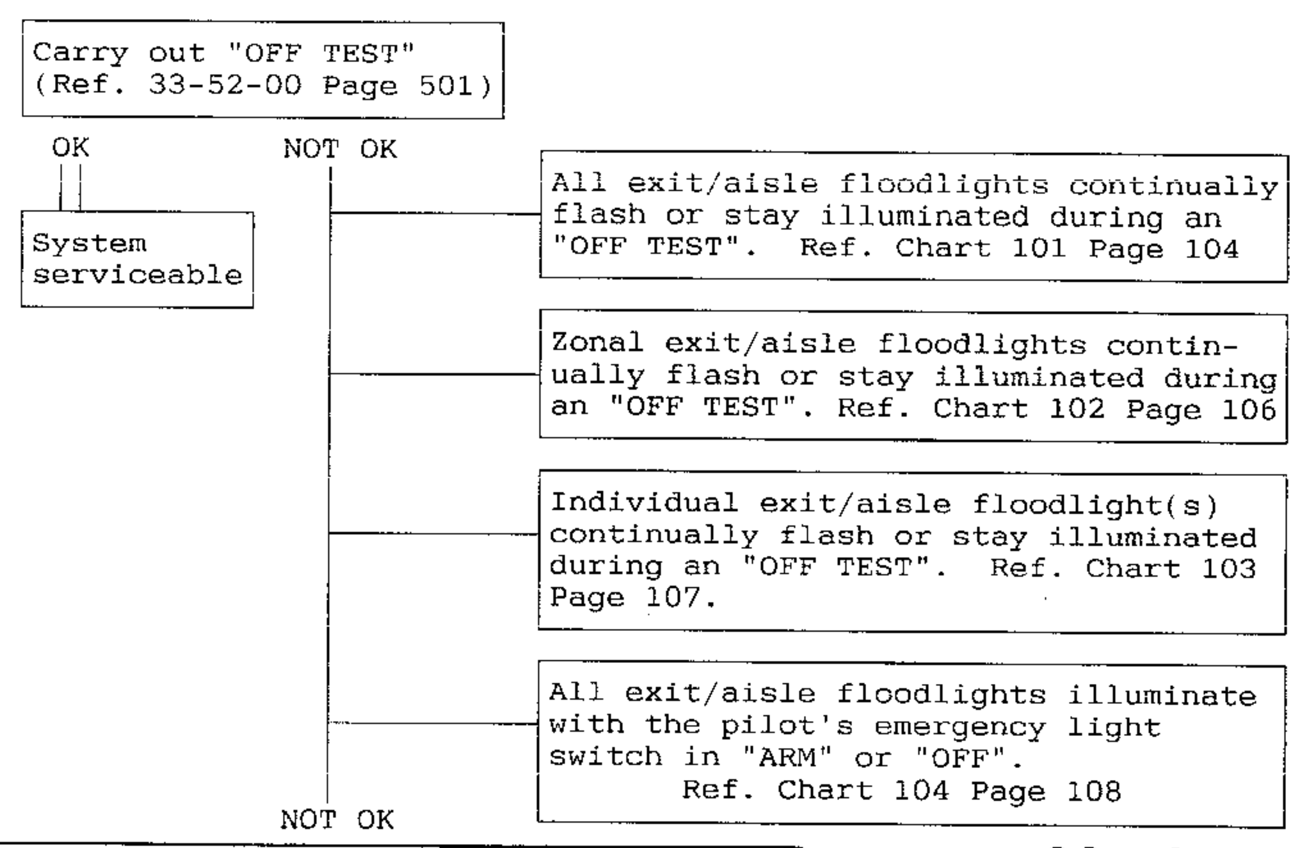
B. Make available electrical ground power as detailed in 24-41-00.

C. Check adjacent aircraft are not transmitting "ON" signals.

D. Ensure correct transmitter is fitted to aircraft (Ref. IPC 33-52-03, Fig 2).

3. Trouble shooting

The following pages are the trouble shooting procedures to be adopted for a given fault. In all cases an "OFF TEST" (Ref. 33-52-00 Page 501) must be carried out to verify the systems operation.



NOT OK

- Zonal exit/aisle floodlights illuminate with the Pilots' emergency light switch in "ARM" or "OFF". Ref. Chart 105 Page 109
- Individual exit/aisle floodlights illuminate with the Pilots' emergency light switch in "ARM" or "OFF". Ref. Chart 106 Page 110
- Exit/aisle floodlights found ON. Ref. Chart 107 Page 111
- Exit strobe light only found flashing. Ref. Chart 108 Page 112
- Battery monitor LEDs on all exit/aisle units do not blink during an "OFF TEST". Ref. Chart 109 Page 114
- Battery monitor LEDs on zonal exit/aisle units do not blink during an "OFF TEST". Ref. Chart 110 Page 115
- Battery monitor LEDs on individual exit/aisle units do not blink during an "OFF TEST". Ref. Chart 111 Page 116
- Battery monitor and transmitter status LEDs on all exit/aisle units do not blink during an "OFF TEST". Ref. Chart 112 Page 117
- Battery monitor and transmitter status LEDs on zonal exit/aisle units do not blink during an "OFF TEST". Ref. Chart 113 Page 119

NOT OK

NOT OK

- Battery monitor and transmitter status LEDs on individual exit/aisle units do not blink during an "OFF TEST".
  Ref. Chart 114 Page 121
- Complete system will not remain in an "OFF TEST".
  Ref. Chart 115 Page 122
- System in one zone, will not remain in an "OFF TEST".
  Ref. Chart 116 Page 124
- Individual exit/aisle unit LEDs permanently ON.
  Ref. Chart 117 Page 125
- All exit/aisle units appear insensitive during an "OFF TEST".
  Ref. Chart 118 Page 126
- Zonal exit/aisle units appear insensitive during an "OFF TEST".
  Ref. Chart 119 Page 128
- Individual exit/aisle units appear insensitive during an "OFF TEST".
  Ref. Chart 120 Page 129

Aircraft logic for Pilot's emergency lighting switch position

PINS	B	C	D
OFF	OPEN	28V	28V
ARM	OPEN	OPEN	28V
ON	28V	OPEN	OPEN

Table 101

```
* * * * * * * * * * * * * * * *
* ALL EXIT/AISLE FLOODLIGHTS*
* CONTINUALLY FLASH OR STAY *
* ILLUMINATED DURING AN     *
* "OFF TEST".               *
* * * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2) check all exit/aisle floodlights stay illuminated.

YES → Replace suspect transmitter.

NO → FLOODLIGHTS FLASHING

Investigate which transmitter(s) is/are generating "ON" signals by observing which transmitter status LED on an exit/aisle unit blinks when that unit's floodlight illuminates. (Ref. 33-52-02 & 30 Fig 401).

Disconnect suspect transmitter(s) and check aircraft logic is present at the transmitter(s) connector(s). (Ref. Table 101).

NO → Fault find the system (WDM 33-52-11).

YES → Connect suspect transmitter in another aircraft position and check the fault transfers.

YES → Replace suspect transmitter.

NO → Inspect transmitter connector at suspect aircraft position and repair as necessary.

Chart 101 (Sheet 1 of 2)

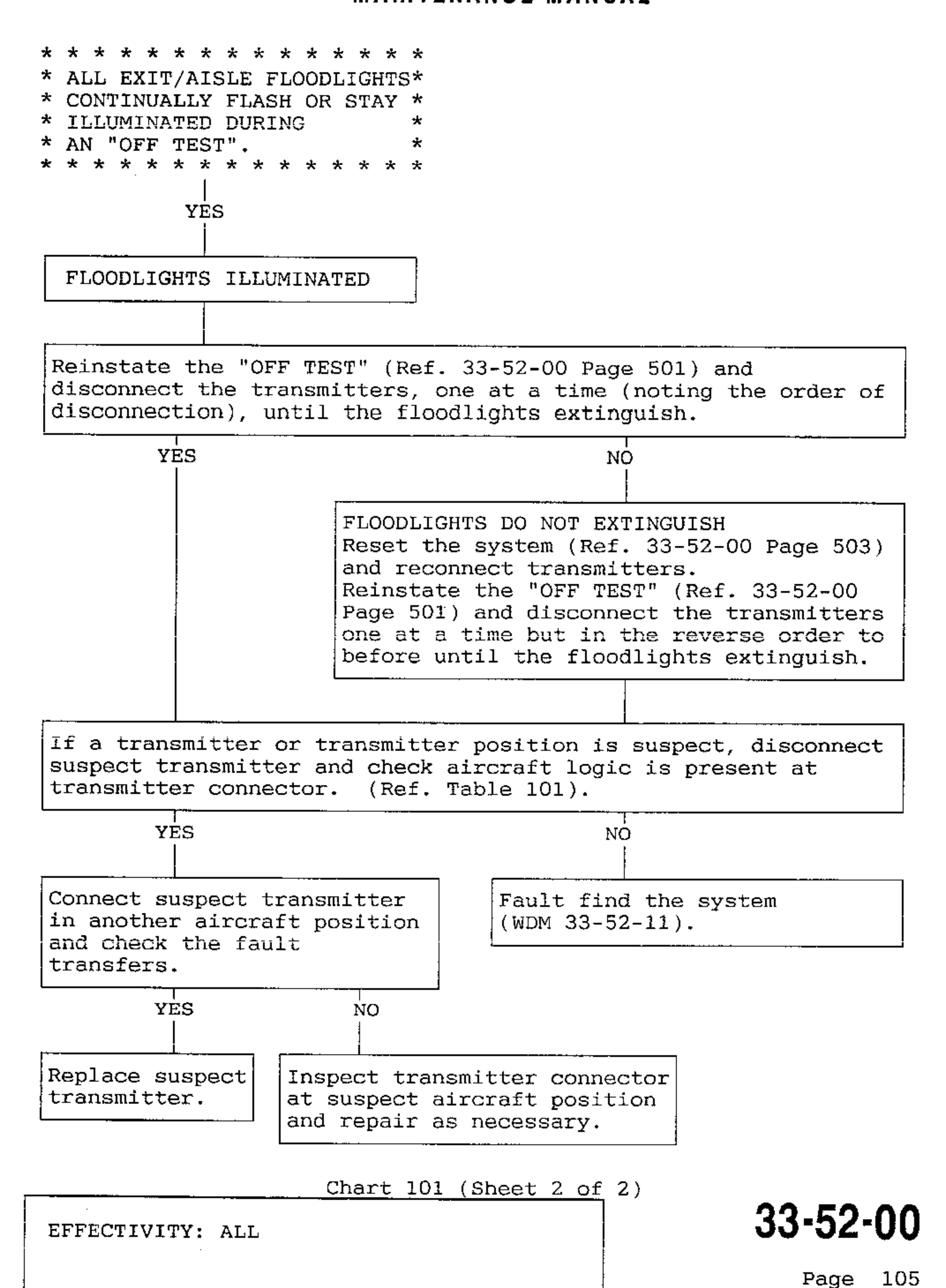


Chart 101 (Sheet 2 of 2)

* * * * * * * * * * * * * * * *
* ZONAL EXIT/AISLE FLOODLIGHTS*
* CONTINUALLY FLASH OR STAY *
* ILLUMINATED DURING AN *
* "OFF TEST". *
* * * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Disconnect transmitter fitted in zone and check aircraft logic is present at the transmitter connector. (Ref. Table 101).

- YES: Connect suspect transmitter in another aircraft position and check the fault transfers.
  - YES: Replace suspect transmitter.
  - NO: Inspect transmitter connector at suspect aircraft position and repair as necessary.
- NO: Fault find the system (WDM 33-52-11).

Chart 102

```
* * * * * * * * * * * * * * *
* INDIVIDUAL EXIT/AISLE     *
* FLOODLIGHT(S) CONTINUALLY *
* FLASH OR STAY ILLUMINATED *
* DURING AN "OFF TEST".     *
* * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Replace suspect exit/aisle unit(s) and if necessary associated battery pack(s).

Chart 103

* * * * * * * * * * * * * * * *
* ALL EXIT/AISLE FLOODLIGHTS *
* ILLUMINATE WITH THE PILOT's *
* EMERGENCY LIGHT IN "ARM" *
* OR "OFF". *
* * * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Investigate which transmitter(s) is/are generating "ON" signals by observing which transmitter status LED on an exit/aisle unit blinks when that unit's floodlight illuminates.
(Ref. 33-52-20 & 30 Fig. 401).

Disconnect suspect transmitter(s) and check aircraft logic is present at the transmitter(s) connector(s). (Ref. Table 101).

NO

Fault find the system (WDM 33-52-11).

YES

Connect suspect transmitter in another aircraft position and check the fault transfers.

YES

Replace suspect transmitter.

NO

Inspect transmitter connector at suspect aircraft position and repair as necessary.

Chart 104

* * * * * * * * * * * * * * *
* ZONAL EXIT/AISLE FLOOD- *
* LIGHTS ILLUMINATE WITH THE*
* PILOT's EMERGENCY LIGHT *
* SWITCH IN "ARM" OR "OFF". *
* * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

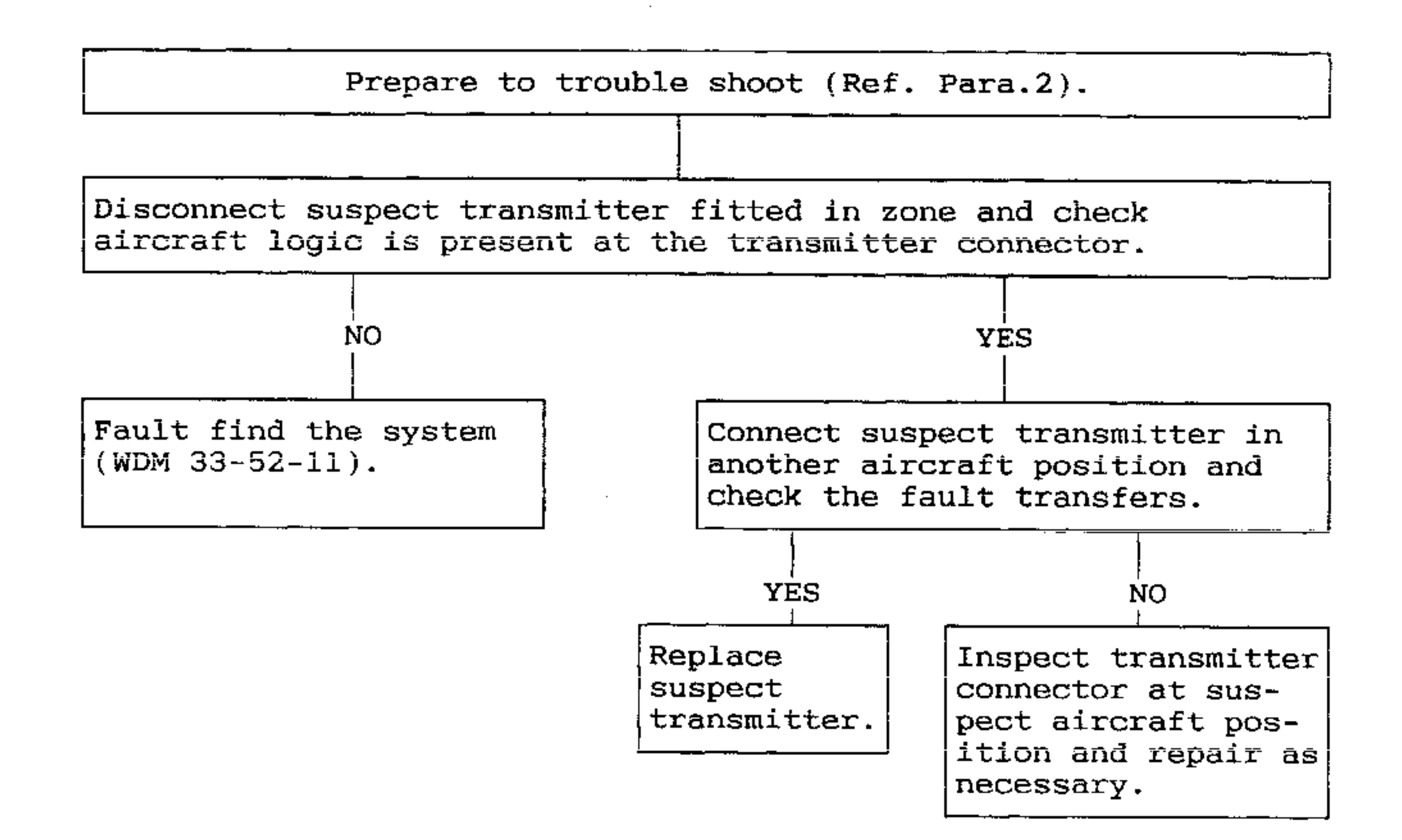


Chart 105

* * * * * * * * * * * * * * * *
* INDIVIDUAL EXIT/AISLE *
* FLOODLIGHT(S) ILLUMINATE *
* WITH THE PILOT's EMERGENCY *
* LIGHT SWITCH IN "ARM" OR *
* "OFF". *
* * * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Replace suspect exit/aisle unit(s) and if necessary associated battery pack(s).

Chart 106

* * * * * * * * * * * * * * *
* EXIT/AISLE FLOODLIGHTS *
* FOUND ON. *
* * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

CAUTION: REMOVING THE AIRCRAFT POWER WITHIN 15 SECONDS OF SWITCHING THE PILOTS EMERGENCY LIGHT SWITCH TO "OFF" MAY CAUSE THE AIRCRAFT'S EXIT/AISLE FLOODLIGHTS TO ILLUMINATE. MERELY REINSTATING AIRCRAFT POWER MAY NOT EXTINGUISH ALL EXIT/AISLE FLOODLIGHTS, THEREFORE IT WILL BE NECESSARY TO RESET THE SYSTEM BY SWITCHING THE PILOTS' EMERGENCY LIGHT SWITCH TO "ARM" FOR 5 SECONDS, THEN BACK TO "OFF" OR USING HAND HELD TRANSMITTER (87-3-1000-2).

Prepare to trouble shoot (Ref. Para.2).

Reset exit/aisle unit(s) using a hand held test transmitter (87-3-1000-2) and then carry out the "OFF TEST". (Ref. 33-52-00 Page 501).

Chart 107

```
* * * * * * * * * * * * * * * *
* EXIT STROBE LIGHT ONLY      *
* FOUND FLASHING              *
* * * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

WARNING: THE STROBE TUBE OPERATES AT A HIGH VOLTAGE AND CONSEQUENTLY BATTERY PACKS SHOULD NOT ROUTINELY BE REMOVED WHEN THE STROBE IS POWERED. HOWEVER, PRACTICALLY, THE BATTERY PACK CAN BE REMOVED WITH THE STROBE OPERATING IF RUBBER GLOVES ARE USED AND CARE TAKEN.

CAUTION: REMOVING THE AIRCRAFT POWER WITHIN 15 SECONDS OF SWITCHING THE PILOTS' EMERGENCY LIGHT SWITCH TO "OFF" MAY CAUSE THE AIRCRAFT'S EXIT/AISLE FLOODLIGHTS TO ILLUMINATE. MERELY REINSTATING AIRCRAFT POWER MAY NOT EXTINGUISH ALL EXIT/ AISLE FLOODLIGHTS, THEREFORE IT WILL BE NECESSARY TO RESET THE SYSTEM BY SWITCHING THE PILOTS' EMERGENCY LIGHT SWITCH TO "ARM" FOR 5 SECONDS, THEN BACK TO "OFF" OR USING HAND HELD TRANSMITTER (87-3-1000-2).

NOTE: The exit unit strobe tube has a dedicated battery fitted within the unit battery pack. The operating current of this battery is less than the 9V incandescent bulb battery and therefore the strobe has a longer period of operation.

Prepare to trouble shoot (Ref. Para.2).

Reset the system by switching the Pilot's Emergency Light switch to "ARM" for 5 seconds, then back to "OFF". Check the strobe resets.

NO:

Switch OFF exit/aisle unit(s) using a hand held test transmitter (87-3-1000-2). Check that strobe resets.

NO | YES

YES:

Carry out "OFF TEST". (Ref. 33-52-00 Page 501).

Chart 108 (sheet 1 of 2)

* * * * * * * * * * * * * * *
* EXIT STROBE LIGHT ONLY *
* FOUND FLASHING *
* * * * * * * * * * * * * * *

NO

Wait until the strobe flattens its battery. Replace the battery packs fitted to the suspect unit and carry out "OFF TEST". (Ref. 33-52-00 Page 501).

YES

Carry out "OFF TEST". (Ref. 33-52-00 Page 501).

Chart 108 (Sheet 2 of 2)

```
* * * * * * * * * * * * * * *
* BATTERY MONITOR LEDs ON   *
* ALL EXIT/AISLE UNITS DO   *
* NOT BLINK DURING AN       *
* "OFF TEST"                *
* * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Discontinue "OFF TEST" (Ref. 33-52-00 Page 501) and allow the exit/aisle unit batteries to recover charge for as long as practical.

Carry out "OFF TEST" (Ref. 33-52-00 Page 501) and check exit/aisle units LEDs blink.

NO: Discontinue "OFF TEST" (Ref. 33-52-00 Page 501) and replace all exit/aisle unit battery packs. Carry out "OFF TEST".

YES: Continue "OFF TEST". (Ref. 33-52-00 Page 501).

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Chart 109

```
* * * * * * * * * * * * * * *
* BATTERY MONITOR LEDs ON   *
* ZONAL EXIT/AISLE UNIT DO  *
* NOT BLINK DURING AN       *
* "OFF TEST".               *
* * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

NOTE: After removing a suspect aisle unit battery pack inspect the connector pins for signs of an adhesive coating. This coating acts as an insulator and by carefully removing it with a suitable abrader (e.g. rubber eraser), the battery pack may be made serviceable.

Prepare to trouble shoot (Ref. Para.2).

Discontinue "OFF TEST" (Ref. 33-52-00 Page 501) and allow the exit/aisle unit batteries to recover charge for as long as practical.

Carry out "OFF TEST" (Ref. 33-52-00 Page 501) and note if exit/aisle units blink.

NO: Discontinue "OFF TEST" (Ref. 33-52-00 Page 501) and replace defective exit/aisle unit battery packs and those fitted to "Red Spot" exit units associated with the zone. (Ref. 33-52-020 Fig. 401).

YES: Continue "OFF TEST". (Ref. 33-52-00 Page 501).

Chart 110

```
* * * * * * * * * * * * * * *
* BATTERY MONITOR LEDs ON    *
* INDIVIDUAL EXIT/AISLE      *
* UNITS DO NOT BLINK DURING  *
* AN "OFF TEST"              *
* * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

NOTE: After removing a suspect aisle unit battery pack inspect the connector pins for signs of an adhesive coating. This coating acts as an insulator and by carefully removing it with a suitable abrader (e.g.rubber eraser), the battery pack may be made serviceable.

Prepare to trouble shoot (Ref. Para.2).

Replace exit/aisle unit battery pack as required and carry out the "OFF TEST". (Ref. 33-52-00 Page 501). Check the exit/aisle units LEDs blink.

NO: Discontinue "OFF TEST" (Ref. 33-52-00 Page 501) and replace defective exit/aisle unit.

YES: Continue "OFF TEST". (Ref. 33-52-00 Page 501).

Chart 111

* * * * * * * * * * * * * * *
* BATTERY MONITOR AND *
* TRANSMITTER STATUS LEDs *
* ON ALL EXIT/AISLE UNITS DO*
* NOT BLINK DURING AN "OFF *
* TEST" *
* * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).
If the aircraft has been electrically disconnected or if transmitter batteries have not been charged for over two weeks, then allow transmitter batteries to charge for as long as practical by leaving Pilots' Emergency Light Switch in "ARM/OFF".

Using a hand held test transmitter (87-3-1000-2) confirm that exit/aisle unit LEDs blink.

NO

YES

Carry out "OFF TEST" (Ref. 33-52-00 Page 501) to confirm serviceability.

Replace all exit/aisle unit battery packs and test system using hand held test transmitter (87-3-1000-2) and confirm unit LEDs blink.

NO

YES

Carry out "OFF TEST" (Ref. 33-52-00 Page 501) to confirm serviceability.

Confirm that the correct transmitter type is fitted to the aircraft (IPC 33-52-03 Fig. 2) and that the batteries are correctly connected (Ref. 33-52-20 Page 402). Test the system using hand held test transmitter (87-3-1000-2) and confirm unit LEDs blink.

NO

YES

Chart 112 (Sheet 1 of 2)

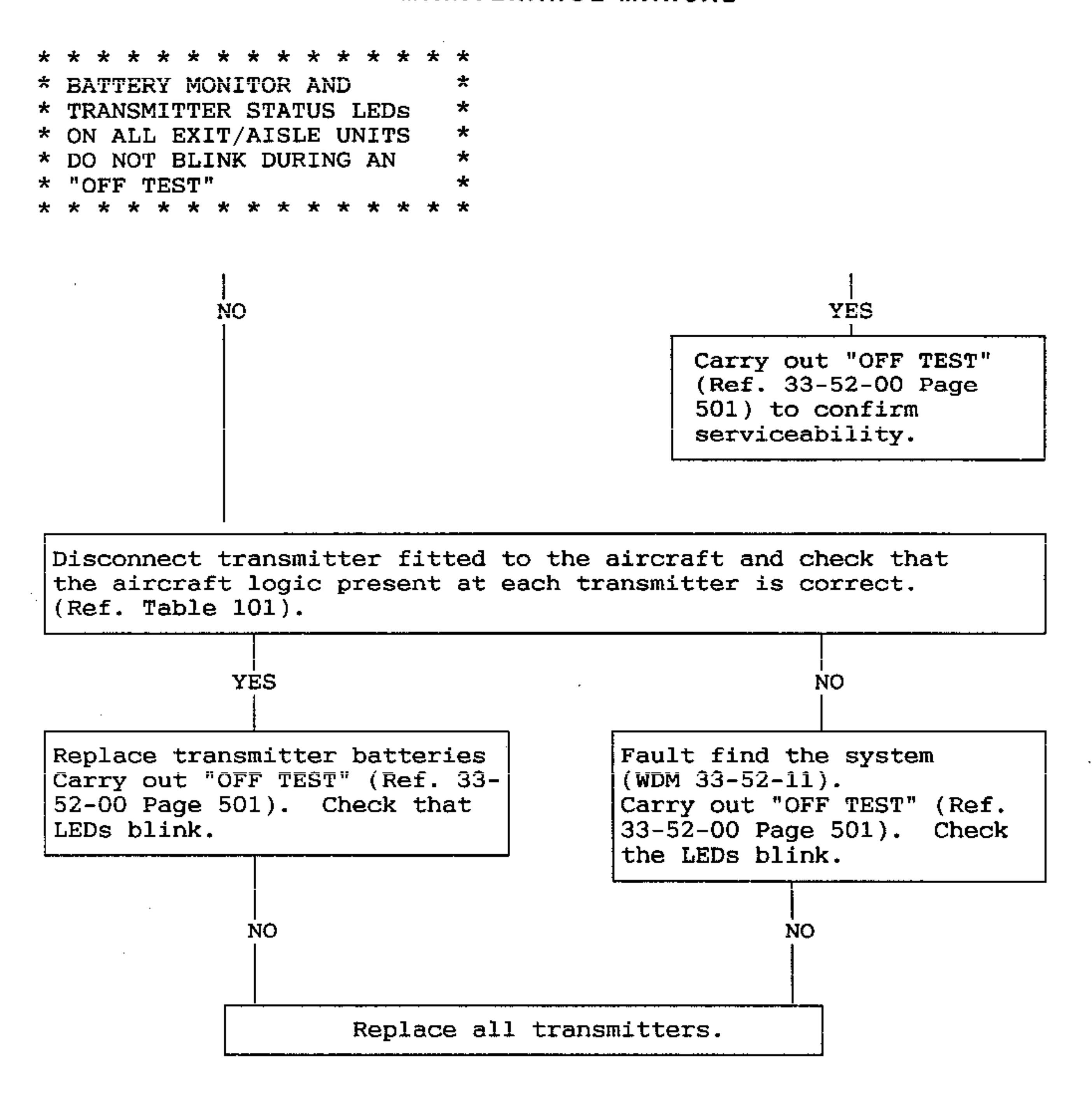


Chart 112 (Sheet 2 of 2)

* * * * * * * * * * * * * * *
* BATTERY MONITOR AND *
* TRANSMITTER STATUS LEDs ON*
* ZONAL EXIT/AISLE UNITS DO *
* NOT BLINK DURING AN *
* "OFF TEST" *
* * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

NOTE: After removing a suspect aisle unit battery pack, inspect the connector pins for signs of an adhesive coating. This coating acts as an insulator and by carefully removing it with a suitable abrader (e.g. rubber eraser), the battery pack may be made serviceable.

Prepare to trouble shoot (Ref. Para.2).

Using a hand held test transmitter (87-3-1000-2) confirm that exit/aisle unit LEDs blink.

NO

YES

Carry out "OFF TEST" (Ref. 33-52-00 Page 501) to confirm serviceability.

Replace zonal exit/aisle unit battery packs. Test system using hand held test transmitter (87-3-1000-2) and confirm unit LEDs blink.

NO

YES

Carry out "OFF TEST" (Ref. 33-52-00 Page 501) to confirm serviceability.

Confirm that the correct transmitter type is fitted to the aircraft (IPC 33-52-03 Fig. 2) and that the batteries are correctly connected (Ref. 33-52-20 Page 402). Test the system using hand held test transmitter (87-3-1000-2) and confirm unit LEDs blink.

NO

YES

Chart 113 (Sheet 1 of 2)

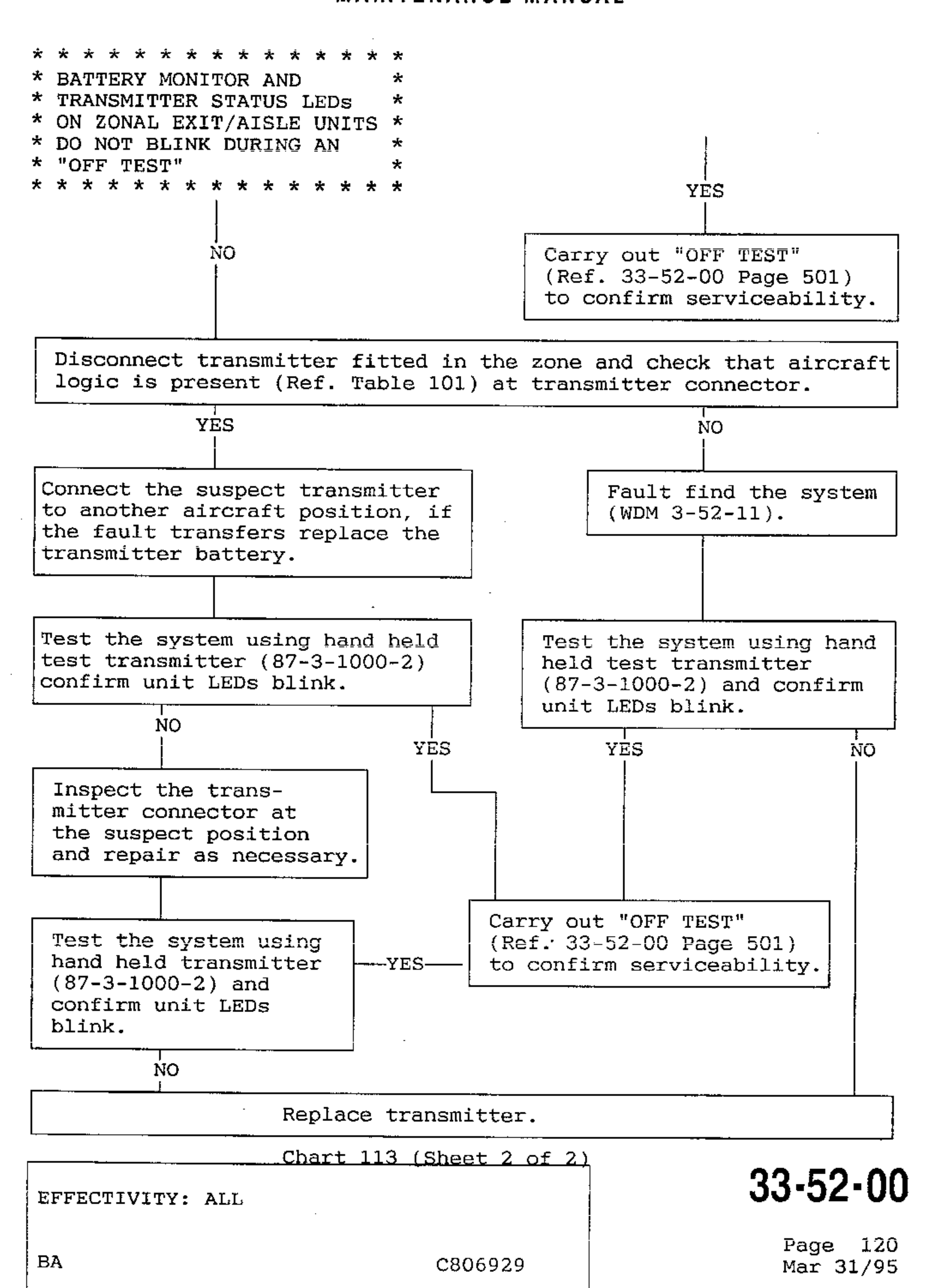


Chart 113 (Sheet 2 of 2)

```
* * * * * * * * * * * * * * * *
* BATTERY MONITOR AND          *
* TRANSMITTER STATUS LEDs      *
* ON INDIVIDUAL EXIT/AISLE     *
* UNITS DO NOT BLINK DURING    *
* AN "OFF TEST"                *
* * * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

NOTE: After removing a suspect aisle unit battery pack, inspect connector pins for signs of an adhesive coating. This coating acts as an insulator and by carefully removing it with a suitable abrader (e.g. rubber eraser), the battery pack may be made serviceable.

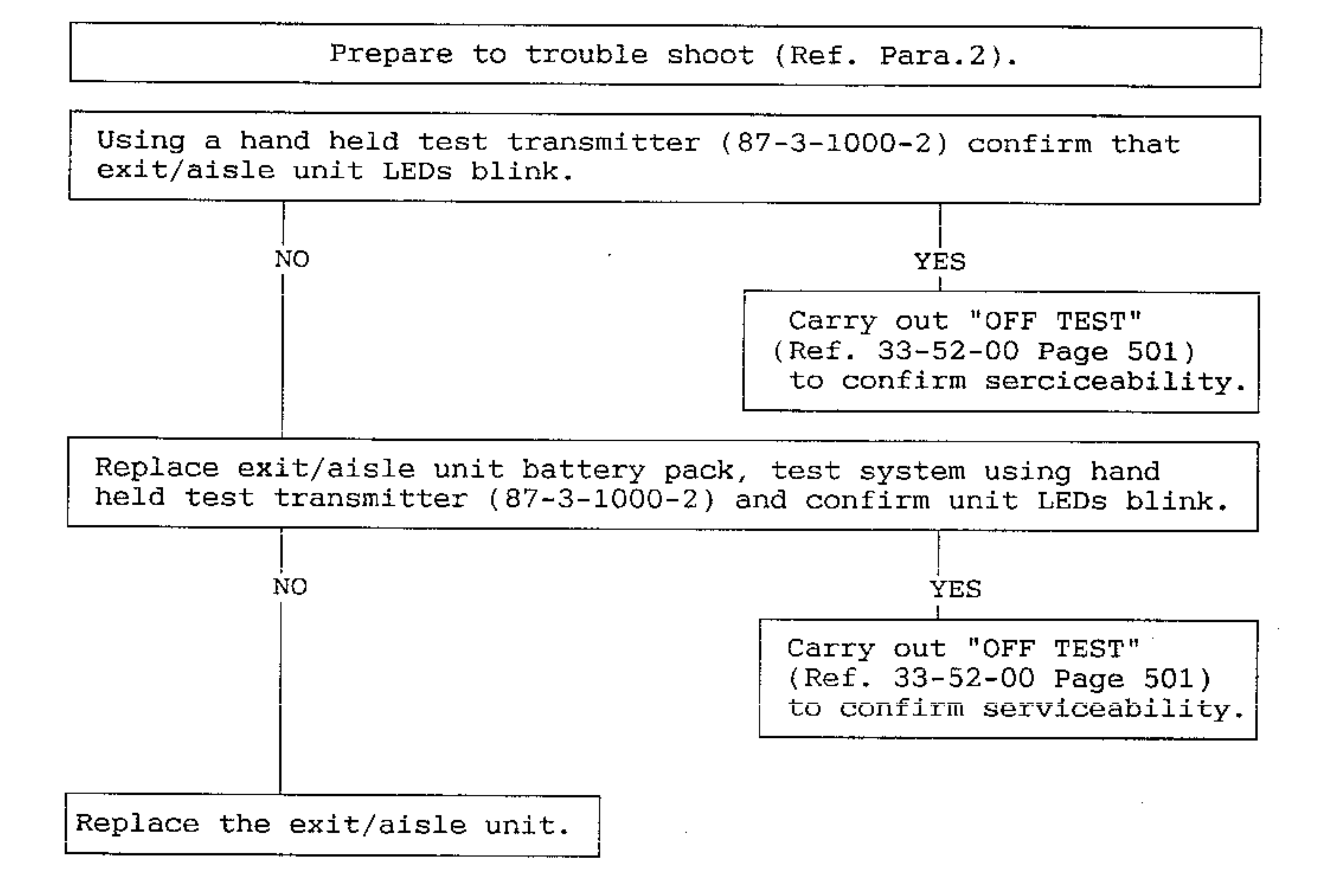


Chart 114

```
* * * * * * * * * * * * * * *
* COMPLETE SYSTEM WILL NOT  *
* REMAIN IN AN "OFF TEST"   *
* * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

CAUTION: REMOVING THE AIRCRAFT POWER WITHIN 15 SECONDS OF SWITCHING THE PILOTS' EMERGENCY LIGHT SWITCH TO "OFF", MAY CAUSE THE AIRCRAFT'S EXIT/AISLE FLOODLIGHTS TO ILLUMINATE. MERELY REINSTATING AIRCRAFT POWER MAY NOT EXTINGUISH ALL EXIT/AISLE FLOODLIGHTS, THEREFORE IT WILL BE NECESSARY TO RESET THE SYSTEM BY SWITCHING THE PILOTS' EMERGENCY LIGHT SWITCH TO "ARM" FOR 5 SECONDS THEN BACK TO "OFF", OR USING HAND HELD TRANSMITTER (87-3-1000-2).

Prepare to trouble shoot (Ref. Para.2).

Reset the system by switching the pilots' Emergency Light switch to "ARM" for 5 seconds, then back to "OFF". Carry out "OFF TEST" (Ref. 33-55-00 Page 501).

Disconnect each transmitter and check aircraft logic is correct (Ref. Table 101).

YES: Reconnect transmitters one at a time and carry out "OFF TEST" (Ref. 33-52-00 Page 501). After re-connection check system remains in "OFF TEST".

- NO: (continued)
- YES: Continue "OFF TEST" (Ref. 33-52-00 Page 501) to prove system serviceability.

NO: Fault find the system (WDM 33-52-11).

Chart 115 (Sheet 1 of 2)

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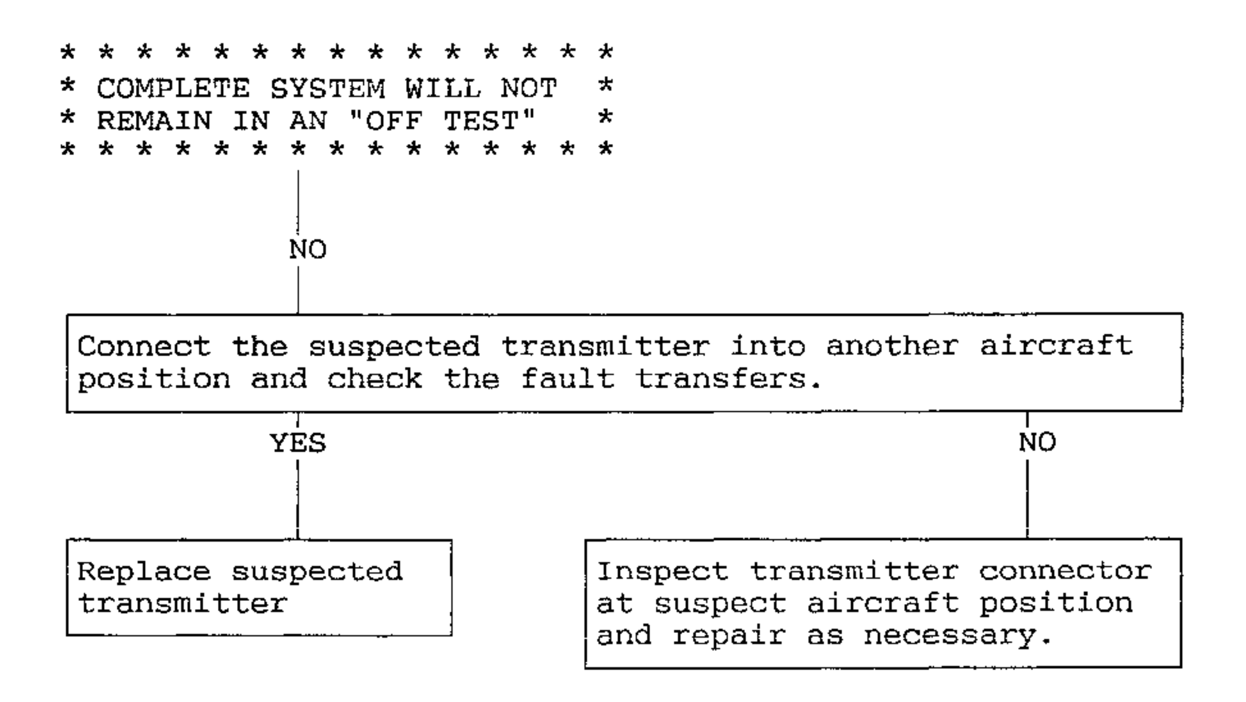


Chart 115 (Sheet 2 of 2)

```
* * * * * * * * * * * * * * *
* SYSTEM IN ONE ZONE WILL   *
* NOT REMAIN IN AN "OFF     *
* TEST".                    *
* * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

CAUTION: REMOVING THE AIRCRAFT POWER WITHIN 15 SECONDS OF SWITCHING THE PILOTS' EMERGENCY LIGHT SWITCH TO "OFF", MAY CAUSE THE AIRCRAFT'S EXIT/AISLE FLOODLIGHTS TO ILLUMINATE. MERELY REINSTATING AIRCRAFT POWER MAY NOT EXTINGUISH ALL EXIT/AISLE FLOODLIGHTS, THEREFORE IT WILL BE NECESSARY TO RESET THE SYSTEM BY SWITCHING THE PILOTS' EMERGENCY LIGHT SWITCH TO "ARM" FOR 5 SECONDS, THEN BACK TO "OFF" OR USING HAND HELD TRANSMITTER (87-3-1000-2).

Prepare to trouble shoot (Ref. Para.2).

Reset the system by switching the Pilots' Emergency Light switch to "ARM" for 5 seconds, then back to "OFF". Carry out "OFF TEST" (Ref. 33-55-00 Page 501).

Disconnect transmitter in zone and check aircraft logic is correct (Ref. Table 101).

YES

Connect transmitter in another zone and carry out "OFF TEST" (Ref. 33-52-00 Page 501) and check that the fault transfers.

YES

Replace suspect transmitter.

NO

Inspect transmitter connector at suspect aircraft position and repair as necessary.

NO

Fault find the system (WDM 33-52-11).

Chart 116

* * * * * * * * * * * * * * *
* INDIVIDUAL EXIT/AISLE UNIT*
* LEDs PERMANENTLY "ON".   *
* * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Replace suspect exit/aisle units and associated battery packs if required.

Chart 117

* * * * * * * * * * * * * * * *
* ALL EXIT/AISLE UNITS APPEAR *
* INSENSITIVE DURING AN *
* "OFF TEST". *
* * * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Confirm that all transmitters are generating "OFF" signals, by observing transmitter status LEDs on exit/aisle units. (Ref. 33-52-20 & 30 Fig. 401).

YES

NO

Reselect the "OFF TEST". (Ref. 33-52-00 Page 501).

Disconnect transmitter in zone and check aircraft logic is correct. (Ref. Table 101).

YES

NO

Fault find the system (WDM 33-52-11).

Change the transmitter battery.

Carry out "OFF TEST" (Ref. 33-52-00 Page 501) and check if fault still occurs.

YES

Change the transmitter.

YES

Chart 118 (Sheet 1 of 2)

```
* * * * * * * * * * * * * * * *
* ALL EXIT/AISLE UNITS APPEAR *
* INSENSITIVE DURING AN       *
* "OFF TEST"                  *
* * * * * * * * * * * * * * * *
```

YES

Allow transmitter batteries to charge for as long as practical by leaving the pilots' Emergency Light switch in "OFF"

Check the range of each transmitter by observing which transmitter status LEDs blink on which exit/aisle units. (Ref. 33-52-20 & 30 Fig. 401).

From the above observation determine if any of the transmitters lacks power and replace.

Chart 118 (Sheet 2 of 2)

```
* * * * * * * * * * * * * * * *
* ZONAL EXIT/AISLE UNITS      *
* APPEAR INSENSITIVE DURING   *
* AN "OFF TEST".              *
* * * * * * * * * * * * * * * *
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Check that the transmitter fitted in the zone is transmitting by observing transmitter status LEDs on exit/aisle units. (Ref. 33-52-20 & 30 Fig. 401).

YES → Allow transmitter batteries to charge for as long as practical by leaving the Pilots' Emergency Light switch in "OFF".

NO → Disconnect transmitter in zone and check aircraft logic is correct. (Ref. Table 101).

- YES → Change the transmitter battery.
- NO → Fault find the system (WDM 33-52-11).

Change the transmitter battery.

Carry out "OFF TEST" (Ref. 33-52-00 Page 501). Check if Exit/Aisle units remain insensitive.

YES → Change the transmitter.

Allow transmitter batteries to charge for as long as practical by leaving the Pilots' Emergency Light switch in "OFF".

Chart 119

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* * * * * * * * * * * * * * * *
* INDIVIDUAL EXIT/AISLE UNITS *
* APPEAR INSENSITIVE DURING *
* AN "OFF TEST" *
* * * * * * * * * * * * * * * *

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
HAND HELD TEST TRANSMITTER	87-3-1000-2
GROUND POWER SUPPLY	

Prepare to trouble shoot (Ref. Para.2).

Replace exit/aisle unit battery pack(s)

Carry out "OFF TEST" (Ref. 33-52-00 Page 501). Check that the units are serviceable.

NO

Replace exit/aisle unit.

Carry out "OFF TEST" (Ref. 33-52-00 Page 501). Check that the units are serviceable.

NO

Determine which transmitter(s) is/are not received by the individual exit/aisle unit(s) (Ref. 33-52-20 & 30 Fig. 401) and trouble shoot suspect transmitter (Ref. Chart 119).

Chart 120

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[1] Circuit breaker 28V DC cabin emergency lights battery charge and exit sign supply.		1-213	L831	Map Ref. Q22	24-50-00	33-51-01
[2] Circuit breaker 28V DC emergency lights ARM/CHARGE supply		15-215	L9058	Map Ref. C13	24-50-00	33-51-01
[3] Emergency ON/ARM/OFF Switch		4-211	L832	Flight Compt.roof panel	33-00-00	33-51-01
[4] Transmitter - Green		Stn. 532R Frame 20	L9060	Wardrobe ceiling RH	33-52-00	33-52-11
[5] Transmitter - Red		Stn. 1050R Frame 42	L9061	Wardrobe ceiling	33-52-00	33-52-11
[6] Transmitter - Yellow		Stn. 1632R Frame 68	L9062	Galley No.6	33-52-00	33-52-11
[7] Transmitter - Orange		Stn. 750R Frame 30	L9063	RH overhead stowage bin	33-52-00	33-52-11
[8] Exit Ident light		Zone 221 Frame 14	L858	Fwd. door LH	33-52-00	33-51-01

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ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[9] Exit Ident light		Zone 222 Frame 12	L834	Fwd. door RH	33-52-00	33-51-01
[10] Exit Ident light		Zone 223	L882	Ctr. door LH	33-52-00	33-51-12
[11] Exit Ident light		Zone 224	L845	Ctr. door RH	33-52-00	33-51-12
[12] Exit Ident light		Zone 242	L851	Rear door RH		33-51-12
[13] Exit Ident light		Zone 241	L878	Rear door LH		33-51-12
[14] Aisle lights		Zone 221-244		Fwd. cabin at seats 1, 2, 6 and 10	33-52-00	
[15] Aisle lights		Zone 221-244		Aft cabin at seats 11, 16, 20, 24 and 26	33-52-00	

Component Identification
Table 102

EMERGENCY ESCAPE PATH FLOOR PROXIMITY LIGHTING
MAINTENANCE PRACTICES

B 1. General (Ref. Fig. 501 and 502)

B A. Before carrying out any extensive testing or trouble shooting of the Overhead Emergency Lighting, which cannot be accomplished by use of the "ON TEST", it is necessary to deactivate the Floor Proximity Lighting. This will prevent the depletion of the Floor Proximity Lighting non-rechargeable battery packs.

B B. Deactivation of the Floor Proximity Lighting involves disconnecting the Floor Proximity Light Control Modules, 4 off, throughout the cabin.

NOTE: All the Control Modules must be disconnected.

B C. After completion of the testing or trouble shooting the Floor Proximity Lighting must be reactivated by reconnecting all the Control Modules and carrying out the "OFF TEST" procedure (33-52-00 Page 501).

B 2. Deactivation

B A. Ensure the Pilots' Emergency Light Switch is set to OFF on the Flight Compartment Roof Panel.

B B. Gain access to the Floor Proximity Lighting Control Modules (transmitters).

B C. Disconnect the electrical connector at each Control Module.

B 3. Reactivation

B A. Ensure DC 'A' Main and DC 'A' Essential Power is, and will remain available.

B B. Reconnect the electrical connector at each Control Module See Table 201 for locations.

COLOUR	FRAME	LOCATION
GREEN	20	IN WARDROBE
RED	42	IN WARDROBE
YELLOW	68	IN GALLEY
ORANGE	30	IN RIGHTHAND HAT RACK BETWEEN STOWAGE BIN 7 & 8 ZONE 223 (LOWER BOTH BINS FOR ACCESS) FWD CABIN

TABLE 201 CONTROL MODULE LOCATIONS

C. Immediately after connecting a Control Module operate the Pilots' Emergency Light Switch from "OFF" to "ARM", pause at least one (1) second then select "OFF".

NOTE: System will shut down after 15 seconds.

D. Repeat B. and C. at each Control Module in turn until all Control Modules are reconnected.

E. Close any panels opened to gain access to Control Modules.

F. Carry out "OFF TEST", as detailed in 33-52-00 Page 501.

NOTE: Use of the "OFF TEST" procedure will prevent any further depletion of the Overhead Emergency Light batteries.

4. Conclusion

A. Whenever the Floor Proximity Lights have been tested, any other aircraft in the immediate vicinity should be checked to ensure that inadvertent switch on of the floor proximity light has not occurred. The controlling radio signals may extend beyond the wingtips of the aircraft being tested.

5. Battery Capacity

A. In the event that a system is found to be inadvertently switched "ON" and has partially depleted the batteries, the system may still be considered serviceable provided that:

(1) The system switches "OFF" on command (either by means of a hand-held test transmitter or the aircraft's transmitters).

(2) The lights are not obviously dim and yellowish.

NOTE: The battery test LEDs will not blink (indicating battery capacity inadequate) subsequent to even a short period of floodlight illumination although the batteries will contain sufficient capacity to exceed the mandatory 10 minutes. A recovery period of up to 12 hours may be required before the test LEDs respond in the correct manner.

B. Two additional green LEDs are used to determine the adequacy of the floodlight battery capacity and the continuity of the floodlight filaments.

(1) On Aisle light units both these LEDs are used (Aisle light units have two floodlights).

(2) On Exit identifier units only one of the two additional LEDs is operational. This monitors the battery condition and the continuity of the single floodlight filament.

C. A blue spot on the lower front face of the white plastic reflector denotes a modified Exit identifier unit.

D. The Battery Condition Monitor LEDs (2 off green per Aisle light unit, 1 off green per Exit identifier unit) may glow dimly when the system is shutdown. This is acceptable and does not impact significantly on Floodlight battery life. Reject units only if Battery Condition Monitor LEDs produce full brilliance when the system is shutdown.

E. When fitting Aisle/Exit identifier unit battery packs ensure that the connector pin/sockets are free of contamination.

6. <u>Transmitters (Control Modules)</u>

A. The basic requirement is that a minimum of two transmitters (Control Modules) be received at each Aisle light unit and Exit identifier unit.

B. All control modules must be serviceable.

7. <u>Aisle Floodlights</u>

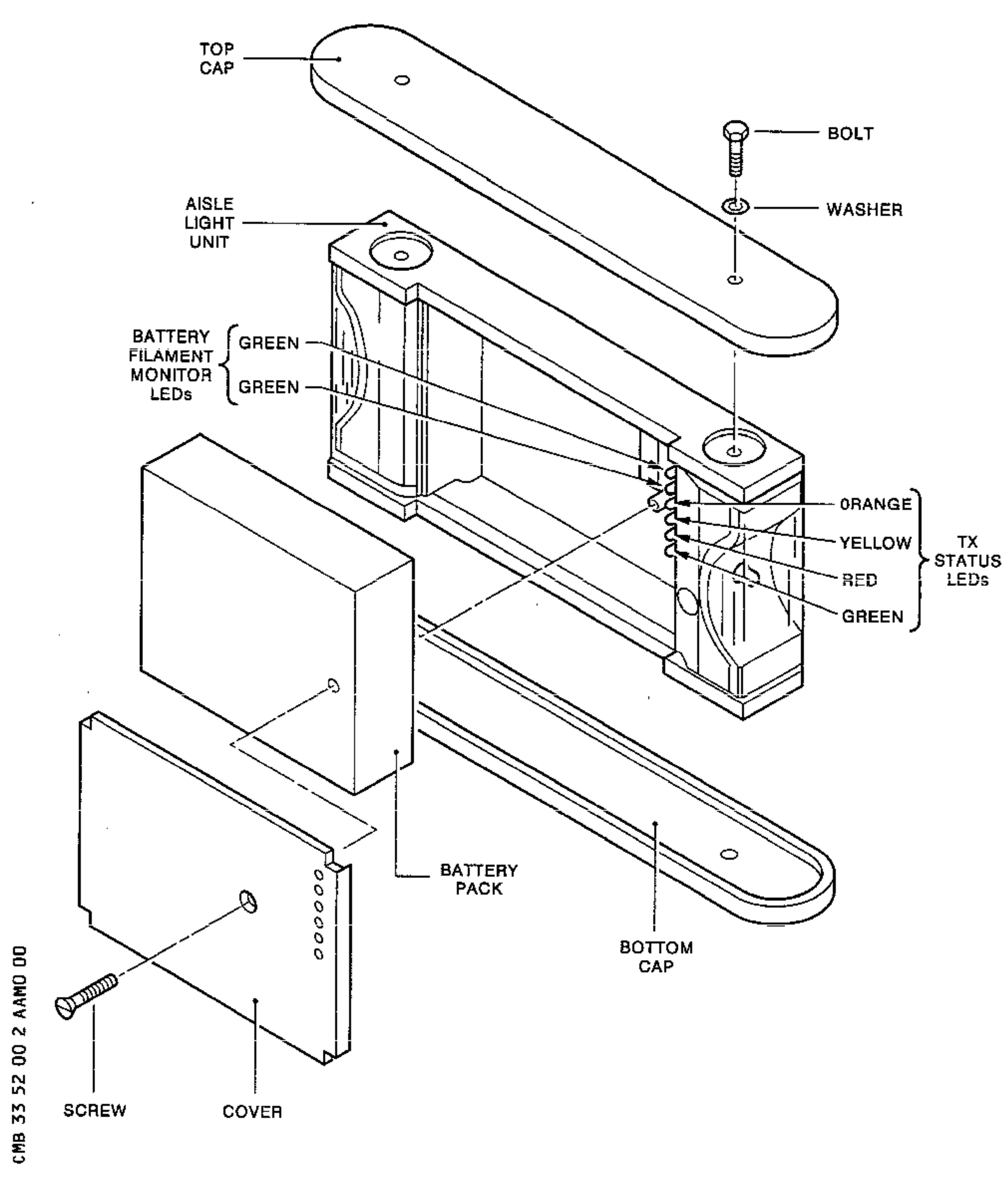
A. An Aisle light unit may be inoperative provided that the Aisle light unit forward and aft of it is serviceable, all other positions must be serviceable.

B. When replacing any seat with an Aisle light unit installed, it is essential that the Aisle light unit and its associated brackets are re-installed in the same position.

8. <u>Exit Identifier Lights</u>

A. All Exit Identifier Lights must be serviceable, except that the strobe tube may be unserviceable.

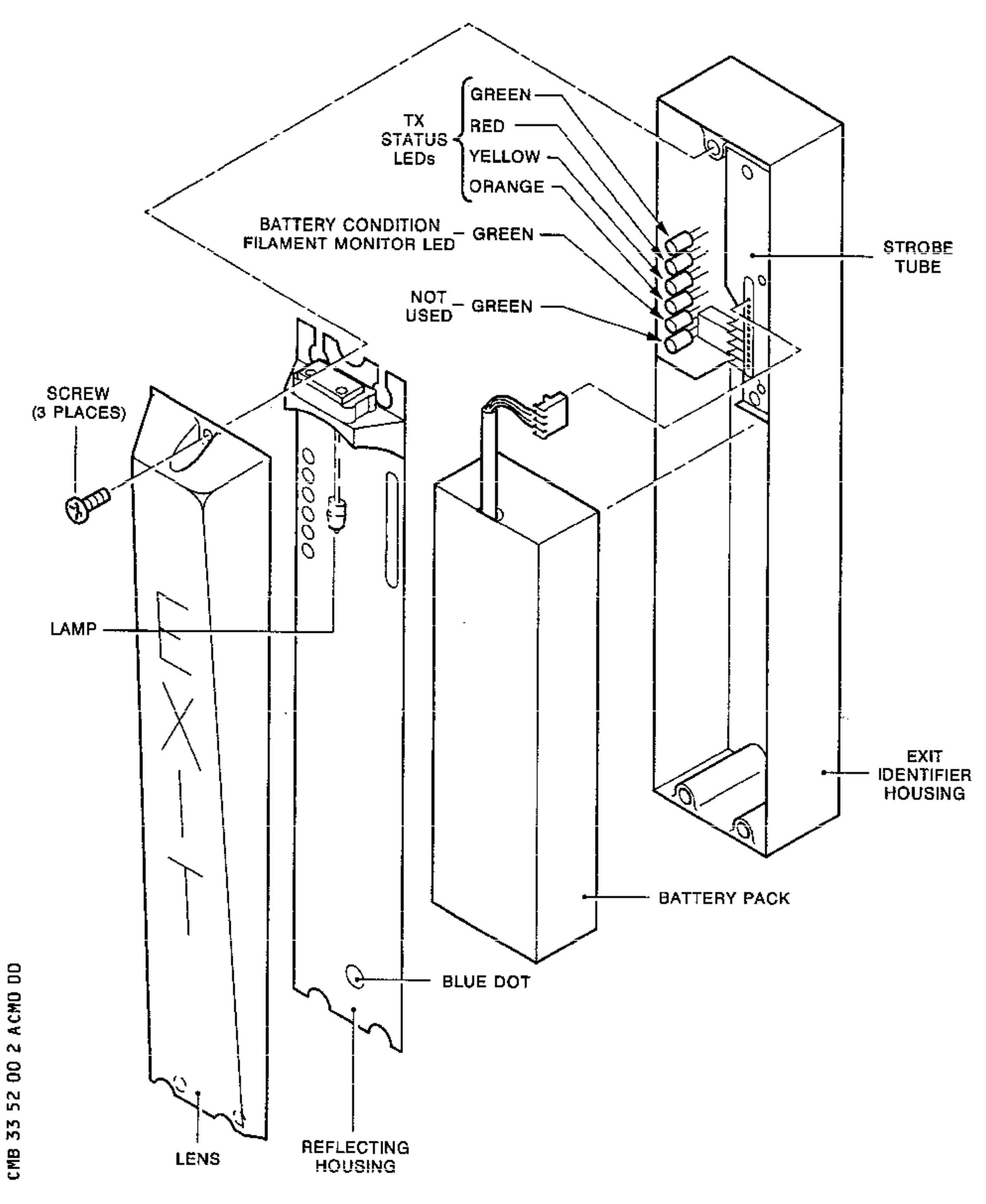
<u>CAUTION:</u> ANY DEVIATION IN ACCORDANCE WITH THE ABOVE SERVICEABILITY MUST BE ACCOMPANIED BY AN ADD.



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BA

Aisle Light Unit
Figure 201



Exit Identifier Unit
Figure 202

LOCATION	COLOUR CODE
STA 532 FR 20	GREEN
STA 1050 FR 42	RED
STA 1632 FR 68	YELLOW
STA 752 FR 30	ORANGE

FIG.204
CONTROL MODULE LOCATIONS

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FLOOR PROXIMITY LIGHTING - ADJUSTMENT/TEST

1. General

RB A. When testing the Emergency Lighting System A, it is important to note that the Pilots' EMERG light control switch will operate both the Emergency Lighting System A and the Floor Proximity Lighting System. Extreme care must be exercised, whenever testing of the Floor Proximity Lighting System is carried out to avoid depletion of the Floor Proximity Lighting System NON-RECHARGEABLE battery packs.

RB NOTE: "ON TEST" (detailed in 33-51-00 Page 202 Para. 2.C.) must be used whenever it is necessary to test the Emergency Lighting System A, "OFF TEST" must be used whenever it is necessary to test the Floor Proximity Lighting.

B. The Stewards forward control panel Emergency light control switch will cause the Floor Proximity Lights to be energized and deplete the batteries and must therefore not be used to turn the Emergency Lights ON unless absolutely necessary.

C. Whenever it is necessary to test the Floor Proximity Lighting, use must be made of the "OFF TEST" Mode of the Floor Proximity Light System. This test is detailed in para 2. "OFF TEST".

RB D. "Blinking LEDs" battery condition monitor checks for each
RB Aisle and Exit Identifier lights shall be carried out
RB during the "ON TEST" and "OFF TEST".

2. "OFF TEST"

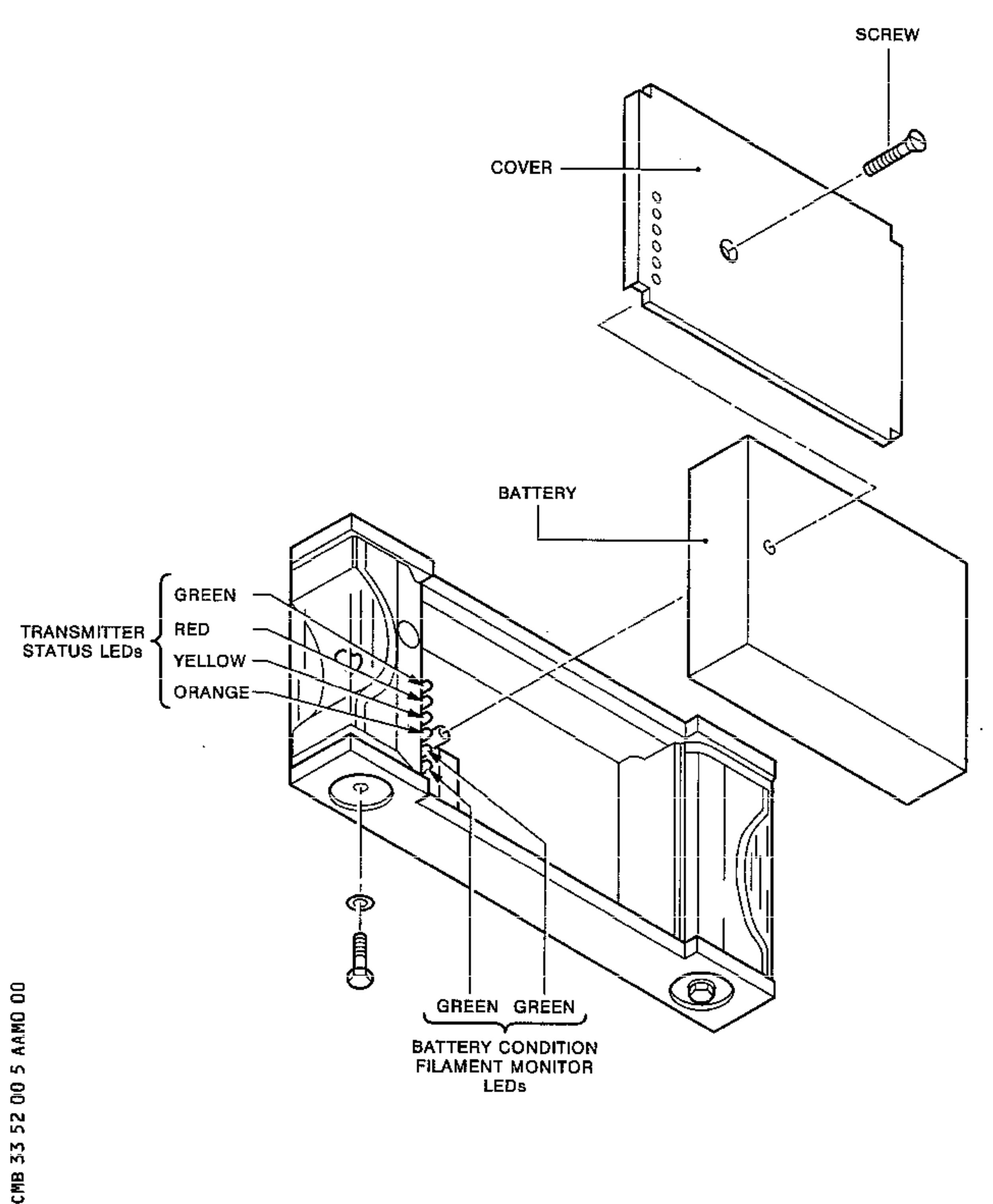
NOTE: The Battery/Filament Monitor LEDs may not illuminate if the Floor Proximity Floodlights have been recently switched ON. The batteries require time to recover to full open-circuit voltage.

A. Ensure normal electrical power situation exists on aircraft, i.e. all busbars live.

B. Select Pilots' EMERG light control switch from "OFF" to "ARM", then wait at least 5 seconds.

C. Next, pausing not longer than 1/2 (half) second at each intermediate switch position, cycle the switch as follows:

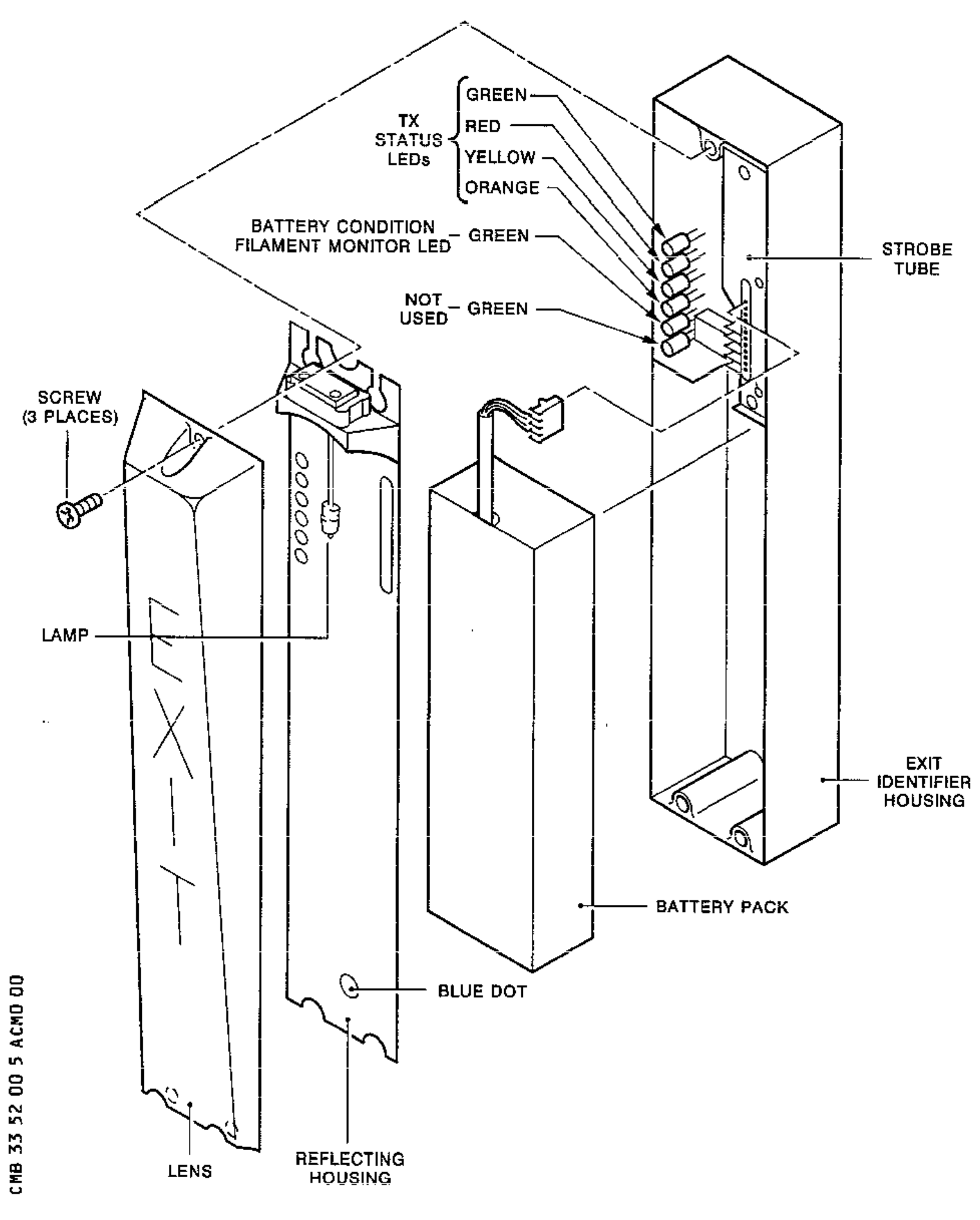
ON - ARM - ON - ARM - OFF



CMB 33 52 00 5 AAM0 00

RB

Aisle Light Unit
Figure 501



RB

Exit Identifier Light
Figure 502

D. Successful "OFF TEST" of each of the Floor Proximity Aisle Light Unit is indicated by rapid, random blinking of the Light Emitting Diodes at that unit (Ref. Fig. 501).

(1) At least one Transmitter (TX) Status LED must blink, however, if only one Transmitter status LED is blinking, the Aisle Light Unit immediately fore and aft of that unit must have at least two TX Status LEDs blinking.

(2) Both Battery/Filament Monitor LEDs must blink.

RB (3) The two green LEDs shall blink approximately every
RB six seconds. The blinking LEDs indicate the
RB satisfactory condition of the battery for operating
RB the two floodlights within the Aisle Light Unit. LEDs
RB that do not blink indicate that the floodlight
RB battery voltage has been reduced to a level where a
RB battery change is required, it does not however mean
RB that the batteries are completely discharged. They
RB may if operated, continue to provide illumination of
RB the floodlights after the blinking has stopped.

E. Successful "OFF TEST" of each of the Floor Proximity Exit Identifier Lights is indicated by rapid, random blinking of the LEDs at that unit (Ref. Fig. 502).

(1) At least two Transmitter status LEDs must blink.

(2) One Battery/Filament Monitor LED must blink.

RB (3) The upper green monitor LED of the Exit Identifier
RB Lights must blink approximately every six seconds to
RB indicate satisfactory condition of the battery within
RB the unit. LEDs that do not blink indicate that the
RB floodlight battery voltage has been reduced to a
RB level where a battery change is required, it does not
RB however mean that the batteries are completely
RB discharged, they may if operated continue to provide
RB illumination after the blinking has stopped.

<u>NOTE</u>: Occasional momentary switch on of the Floodlights may occur, this is acceptable during "OFF TEST"

3. <u>Terminate "OFF TEST"</u>

<u>NOTE</u>: "OFF TEST" will terminate automatically after 15 minutes of its start.

A. At any time, after the first 15 seconds of the "OFF TEST", the test mode may be terminated by selecting "ARM", pausing for at least one second, then selecting "OFF".

NOTE: Test signal will continue for approximately 15 seconds after the test has been terminated.

CAUTION: ELECTRICAL POWER MUST BE MAINTAINED FOR AT LEAST 20 SECONDS.

4. Functional Test

CAUTION: THIS FUNCTIONAL TEST MUST BE CARRIED OUT ONLY AS REQUIRED BY THE APPROVED MAINTENANCE SCHEDULE, THIS TEST CONSIDERABLY DISCHARGES THE FLOOR PROXIMITY LIGHT NON-RECHARGEABLE BATTERY PACKS WHICH MUST BE REPLACED AFTER COMPLETION OF THIS TEST.

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit breaker safety clip	-

B. Prepare to Functionally Test Floor Proximity Lights

(1) Make available electrical ground power as detailed in 24-41-00.

(2) Set the pilots' EMERG lights control switch on the flight compartment roof panel to "ARM" and check that the EMERG lights control switch on the forward stewards control panel is at NORMAL.

C. Function Test Floor Proximity Lights

(1) Trip the CABIN EMER LTS SUP circuit breaker L9058 on panel 15-215, map ref. C13, and fit a safety clip.

(2) Check that the Floor Proximity Lighting Aisle Light Units are illuminated and the Exit Identifier Lights are illuminated and the strobe tubes are flashing.

RB RB RB (3) Check that the upper green LED on the Exit Identifier Lights and the two green LEDs on the Aisle Lights all blink every six seconds.

RB (4) After 4 minutes, conclude the test by setting the pilots' EMERG lights control switch to "OFF".

RB (5) Remove the safety clip and reset the circuit breaker tripped in operation (1).

RB (6) Replace the batteries in all the Floor Proximity Aisle Light Units and Exit Identifier lights.

RB (7) Carry out "OFF TEST" procedure.

RB (8) Allow the Emergency Lights batteries to recharge for a minimum uninterrupted period of 2 hours.

NOTE: The pilots' EMERG lights control switch can be in the OFF or ARM position to recharge the Emergency light batteries.

D. Conclusion

(1) Switch off and disconnect electrical ground power as detailed in 24-41-00.

CONTROL MODULE (TRANSMITTER) REMOVAL/INSTALLATION

1. Special Equipment Required

   None.

2. Removal

   A. Ensure pilot's EMERG lights control switch, flight compartment overhead panel is set to "OFF".

   B. Gain access to control module (ref. Fig. 401).

   C. Disconnect electrical connector.

   D. Disconnect 4 screws and washers securing control module.

   E. Remove control module.

   F. Retain mounting plate.

3. Installation

   A. Ensure D.C. 'A' Main and D.C. 'A' Essential Power is available and will remain available until installation is complete.

   B. When changing control modules it is necessary to transfer the rechargeable battery pack from the off going to the on going unit.

   C. If the battery being transferred is obviously defective, e.g. broken connector leads, a replacement battery must be demanded. Ensure the 30 day battery shelf life has not expired.

      NOTE: This requirement is not applicable to transferred batteries, which have been subject to trickle charge on the aircraft and hence have not been "on the shelf".

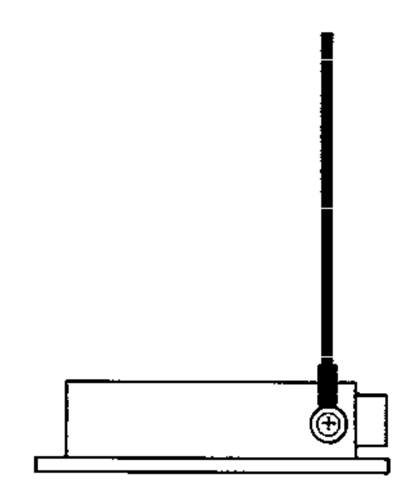
   D. When fitting new control modules or batteries to control modules ensure the battery retaining strap is effective. Pack out with material NPAS0842 or equivalent as required.

   E. Position antenna as shown on Fig. 401.

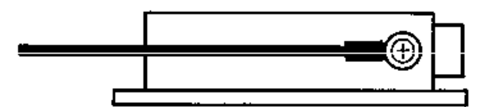
   F. At frames 20, 30, 42 and 68 secure antenna with a p-clip provided on control module.

CIC 33-004M 00A

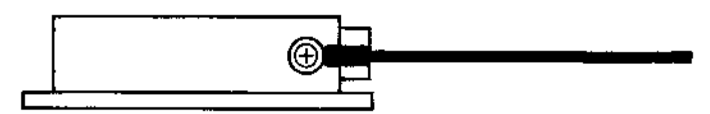
FRAME 20 GREEN
FRAME 42 RED
WARDROBE CEILING - RH



FRAME 30 ORANGE
R.H. OVERHEAD STOWAGE BIN



FRAME 68
YELLOW
GALLEY NO. 6



33 52 10 401 CON MM 00A

Control Module Locations
and Antenna Positions
Figure 401

G. Install Control Module using fixings removed previously. Ensure mounting plate is in position.

CAUTION: ENSURE D.C. 'A' MAIN AND D.C. 'A' ESSENTIAL POWER REMAINS AVAILABLE AND REMAINS AVAILABLE FOR 15 SECONDS AFTER SETTING PILOTS SWITCH TO "OFF".

H. Connect electrical connector.

I. Operate pilot's EMERG light control switch on flight compartment overhead panel to "ARM." Pause at least one second, return switch to "OFF".

J. Carry out "OFF TEST" as detailed in 33-52-00 page 501, ensure that the appropriate "colour" of signal is being received at the adjacent aisle or exit identifier light, as shown by the Transmitter Status LED's.

K. Close any access panels opened.

L. Remove electrical power if no longer required.

EXIT IDENTIFER LIGHT REMOVAL/INSTALLATION -

1. Special Equipment Required

   A. Warning Tag - DO NOT OPERATE, or local equivalent.

2. Removal (Ref. Fig.401)

   WARNING: THE STROBE TUBE OPERATES AT HIGH VOLTAGE, TAKE PRECAUTIONS TO ENSURE FLOOR PROXIMITY LIGHTS ARE NOT OPERATED WHILE THE LENS IS REMOVED.

   A. Position the pilots' EMERG Lights switch, flight compartment overhead panel to "OFF", attach a "DO NOT OPERATE" tag to switch.

   B. Remove the three (3) screws securing the lens and remove lens.

   C. Carefully lift the reflector assembly over the strobe tube.

   CAUTION: TAKE CARE NOT TO STRAIN WIRING TO LAMP HOLDER.

   D. Unplug the battery harness at printed circuit board. Note the orientation of the connector.

   E. Remove the battery pack.

   F. Remove the filister head screws located at each corner of the unit (4 off).

   G. Refit the reflector assembly, taking care not to bend L.E.D.'s or strobe tube.

   H. Refit the lens using three (3) screws removed previously.

3. Installation

   WARNING: THE STROBE TUBE OPERATES AT HIGH VOLTAGE, TAKE PRECAUTIONS TO ENSURE FLOOR PROXIMITY LIGHTS ARE NOT OPERATED WHILE THE LENS IS REMOVED.

   A. Position the pilots' EMERG Lights switch, flight compartment overhead panel to "OFF", attach a "DO NOT OPERATE" tag to switch.

   B. Remove the three (3) screws securing the lens and remove lens.

   C. Carefully lift the reflector assembly over the strobe tube.

   CAUTION: TAKE CARE NOT TO STRAIN WIRING TO LAMP HOLDER.

D. Install the unit into mounting bezel or on to mounting inserts using filister headed screws, one at each corner of the unit (4 off).

CAUTION: WHEN INSTALLING BATTERY PACKS WITH ALTERNATIVE PART NUMBERS, OBSERVE PRECAUTIONS DETAILED IN PARA 4.C BELOW.

E. Install the battery pack and connect the battery harness to the printed circuit board, wires should not pass over strobe board.

F. Refit reflector assembly, ensuring L.E.D.'s and strobe tube are correctly located in the holes and slots in the reflector. Take care not to bend L.E.D.'s and ensure the L.E.D.'s are visible through the reflector.

G. Refit the lens using the three screws removed previously.

H. Remove "DO NOT OPERATE" tag from pilots' EMERG light control switch.

I. Carry out "OFF TEST" as detailed in 33-52-00 Page 501.

4. Battery Replacement

A. Special Equipment Required.

(1) Warning Tag - DO NOT OPERATE, or local equivalent.

B. Replacement

WARNING: THE STROBE TUBE OPERATES AT HIGH VOLTAGE, TAKE PRECAUTIONS TO ENSURE FLOOR PROXIMITY LIGHTS ARE NOT OPERATED WHILE THE LENS IS REMOVED.

(1) Position the pilots' Emergency Lights switch, flight compartment overhead panel to "OFF", attach a "DO NOT OPERATE" tag to switch.

(2) Remove the three (3) screws securing the lens and remove lens.

(3) Carefully lift the reflector assembly over the strobe tube.

CAUTION: TAKE CARE NOT TO STRAIN WIRING TO LAMP HOLDER.

(4) Unplug the battery harness at printed circuit board. Note the orientation of the connector.

(5) Remove the battery pack.

CAUTION: WHEN INSTALLING BATTERY PACKS WITH ALTERNATIVE PART NUMBERS, OBSERVE PRECAUTIONS DETAILED IN PARA 4.C. BELOW.

(6) Install the battery pack and connect the battery harness to the printed circuit board, wires should not pass over strobe board.

(7) Refit the reflector assembly, ensuring L.E.D.'s and strobe tube are correctly located in the holes and slots in the reflector. Take care not to bend L.E.D.'s and ensure the L.E.D.'s are visible through the reflector.

(8) Refit the lens using the three screws removed previously.

(9) Remove "DO NOT OPERATE" tag from pilots' Emergency Light switch.

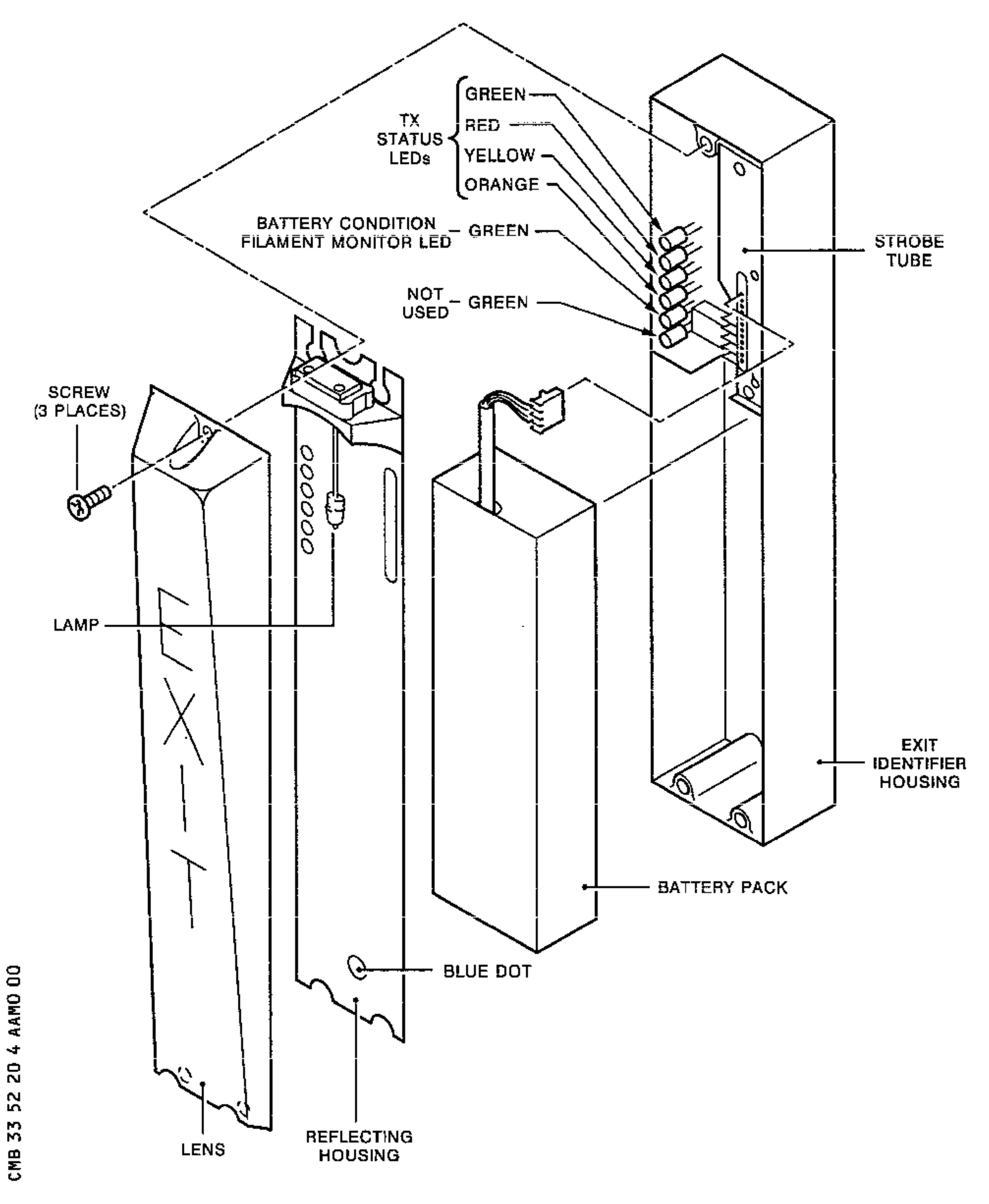
(10) Carry out "OFF TEST" as detailed in 33-52-00 page 501.

C. Installation of alternate battery packs.

CAUTION: INCORRECT INSTALLATION OF THE BATTERY PACK WILL CAUSE DAMAGE TO THE EXIT IDENTIFIER UNIT.

(1) When fitting battery packs with alternative Pt. Nos. to Exit Identifier Units, be sure that the connector is installed with the orange wire nearest the battery and the black wire furthest from the battery. See Fig. 402.

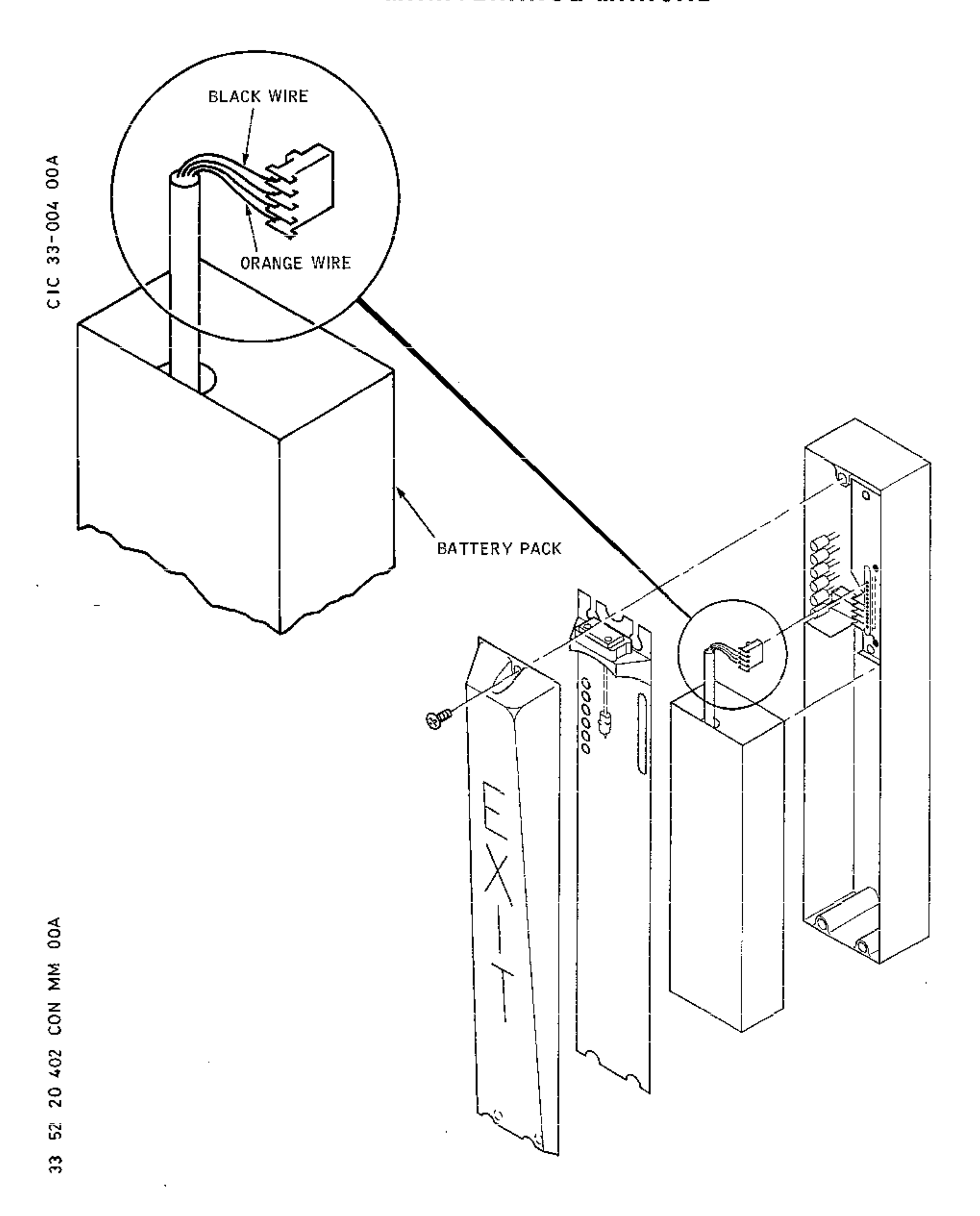
(2) Pack out with material NPSA0824 or equivalent as required.



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RB

Exit Identifier Light
Figure 401



Alternative Battery Installation
Figure 402

AISLE LIGHT UNIT - REMOVAL/INSTALLATION

1. Special Equipment Required

   None.

RB 2. Removal (Ref. Fig. 401 and 403)

RB NOTE: The Housing assembly for the Aisle Light unit is part
RB of the seat assembly.

RB A. Remove the Dzus Fastener securing the glazed door and
RB unclip the door from its frame. Care should be taken as
RB both the door and clip are very delicate and fragile.

RB B. Loosen the screw holding the Retainer Bar and allow the
RB Retainer bar to hang loosely.

RB C. Remove the Aisle Light by carefully pulling on the Top Cap Cover.

RB 3. Battery Replacement (Ref. Fig. 402)

RB A. Remove the cover screw and remove the cover.

RB B. Remove the battery pack.

RB C. Install the replacement battery pack.

CAUTION: SOME BATTERY PACKS HAVE BEEN SUPPLIED WITH CONTAMINATED CONNECTORS, CHECK CONNECTOR FOR CONTAMINATION BEFORE INSTALLING.

RB (1) When installing the battery pack, ensure that the battery pack connector engages the wiring harness connector in the base of the unit.

(2) When installing an alternate battery pack, be sure that the unused pin of the battery pack flying lead mates with the unused pin on the connector socket.

RB (3) Pack out the Aisle Light Unit, as necessary with packer NPAS0824, or equivalent, to ensure battery pack fits well.

RB (4) Refit cover and screw.

RB 4. Installation (Ref. Fig. 401)

RB A. Slide the Aisle Light Unit into the Seat Lamp Housing,
RB pushing home firmly to ensure the LEDs are clearly visible
RB through the slot at the top right hand corner of the
RB Housing assembly.

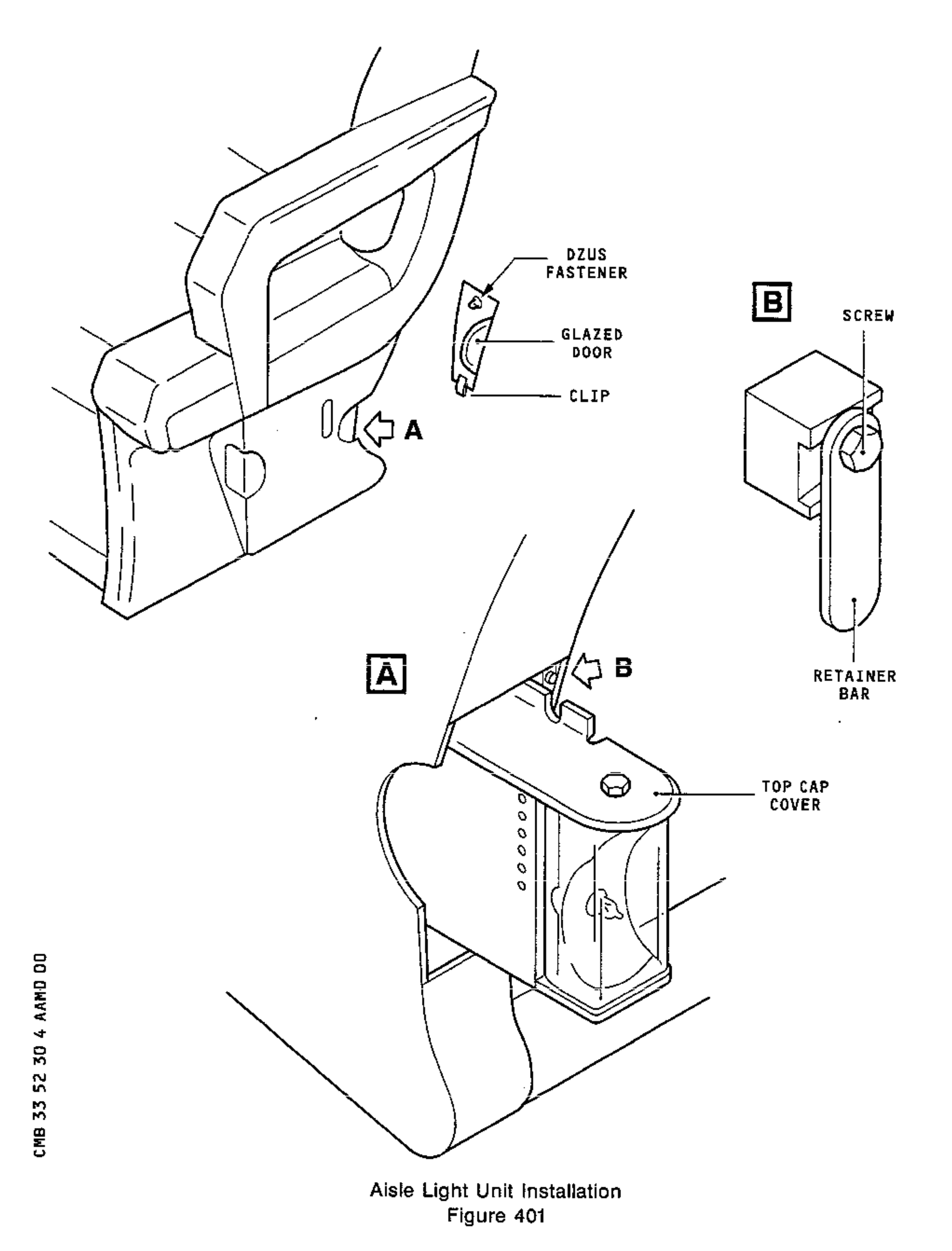
RB B. Fit the Retaining Bar into the recess on the mounting
RB block and tighten the retainer bar screw to secure the
RB Aisle Light Unit.

RB C. Refit the glazed door and tighten the Dzus Fastener.

RB CAUTION: PRE AND POST MOD 33F080 LIGHTS MUST NOT BE
RB FITTED TO THE SAME AIRCRAFT.

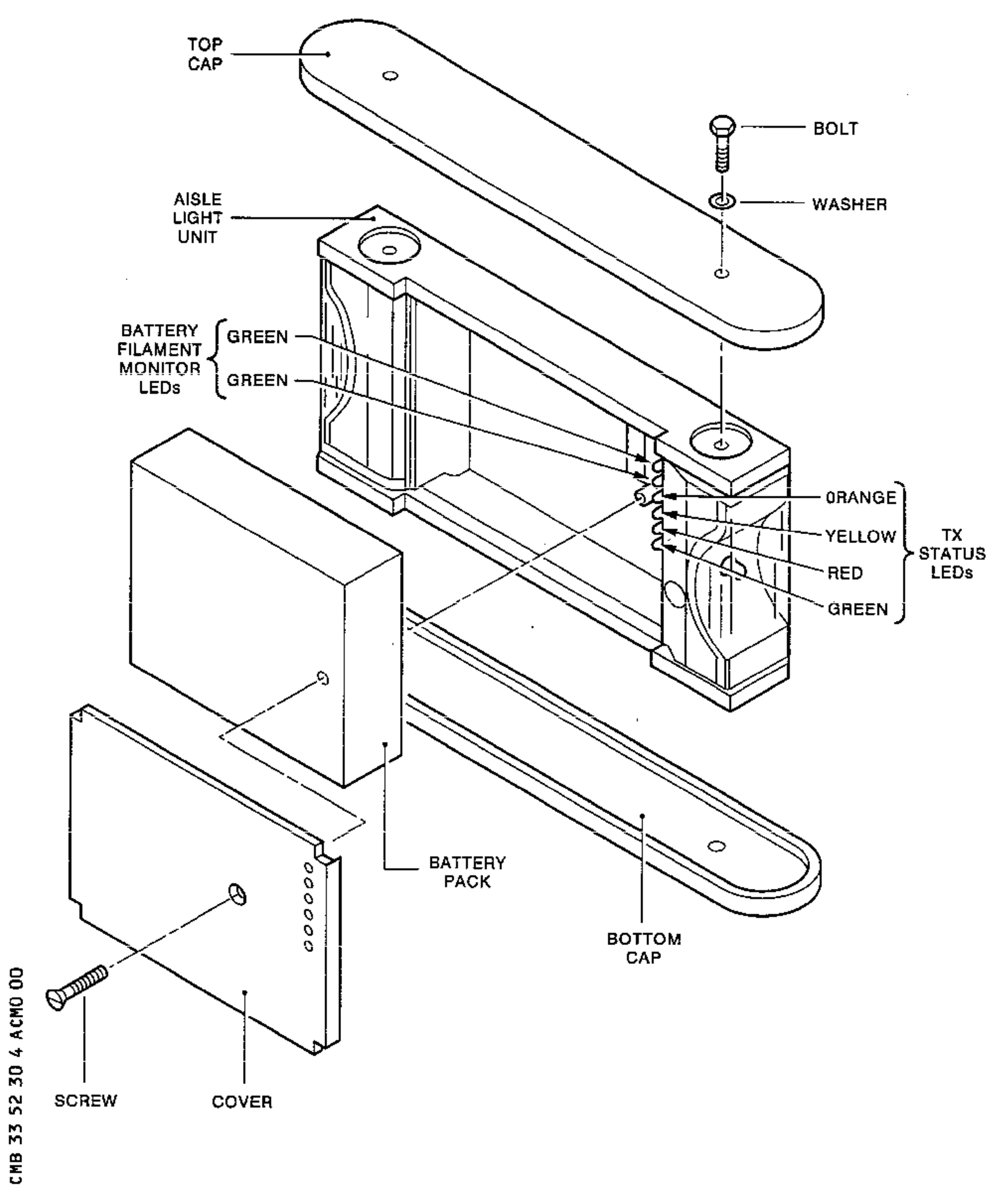
RB 5. Conclusion

A. Carry out an "OFF TEST" as detailed in 33-52-00 Page 501.



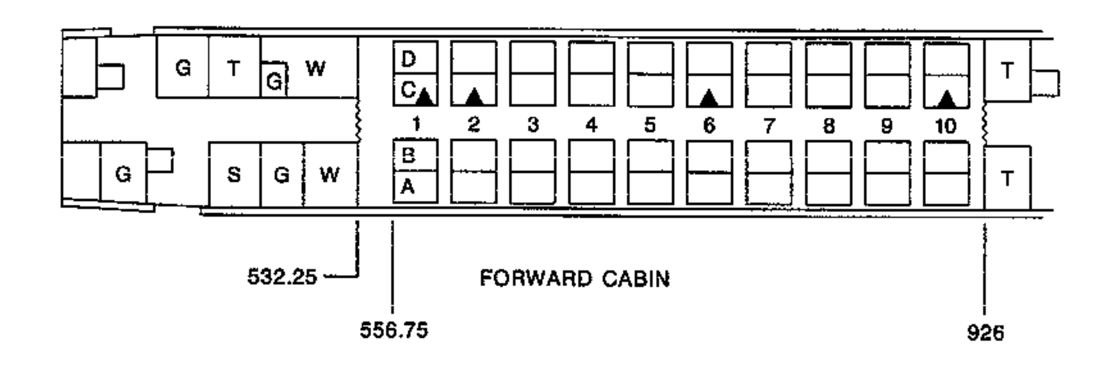
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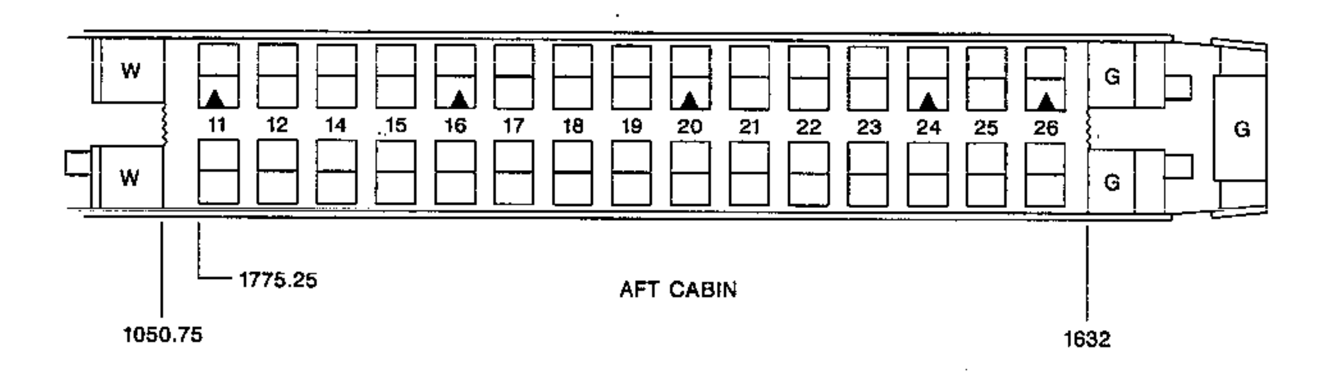
Aisle Light Unit Installation
Figure 401



RB

Aisle Light Unit-Assembly
Figure 402





▲ DENOTES LOCATION OF AISLE FLOODLIGHT

CMB 33 52 30 4 AEM0 00

BA

Aisle Light Unit-Location
Figure 403

END OF THIS SECTION

NEXT